

**MFA Eastside Airfield  
Improvements Project Section  
106 Technical Report**

Moffett Federal Airfield,  
Santa Clara County,  
California



December 28, 2021

## Sign-off Sheet

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# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

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# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

## **Executive Summary**

Stantec Consulting Services, Inc (Stantec) has prepared this technical report on behalf of Planetary Ventures, LLC (PV), which has entered into an Adaptive Reuse Lease with the National Aeronautics and Space Administration (NASA) for the NASA Ames Research Center (ARC) Eastside Airfield area at Moffett Federal Airfield (MFA). PV is proposing new improvements at the Eastside portion of the Eastside Airfield area, including an expanded Bus Maintenance Facility, one private aircraft hangar, and the reuse of Building 686 for the proposed private hangar support services, which have been designed only at a conceptual level at the time this report was prepared. Additional improvements associated with the project include construction of a new aircraft apron adjacent to the East Parallel Taxiway and utility improvements. All work associated with this proposed Eastside Airfield Improvement Project will be referred to as the “Undertaking.”

As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), which requires federal agencies to consider effects of all activities on historic properties. This technical report addresses the requirements of Section 106 of the NHPA, per 36 CFR Section 800, to assess the potential of adverse effects on historic properties. It includes a description of the Undertaking, the establishment of an appropriate Area of Potential Effects (APE), the identification of all historic properties within the APE, and an analysis of potential adverse effects based upon the established Criteria of Adverse Effects.

The APE includes the majority of the Eastside/Airfield area of MFA, as well as the boundaries of the NRHP-eligible expanded Naval Air Station (NAS) Sunnyvale Historic District, and adjacent blocks in Sunnyvale to the east along Enterprise Avenue, including the Lockheed Martin Missile and Space Division (LMSD) campus. The APE is bounded by the levees along San Francisco Bay to the north, U.S. Highway 101 to the south, and adjacent areas to the airfield to the west. The area with the potential for direct physical alterations is referred to as the project footprint. The vertical APE will vary throughout the project footprint with a maximum depth of 50 feet below grade at the proposed facilities and 2-8 feet below grade at other locations of direct physical alterations.

Research and surveys identified the NAS Sunnyvale Historic District and the Alviso Salt Pond within the APE. Three additional resources that required further evaluation for NRHP eligibility were identified: Building 511, the Moffett Field Golf Course, and the Lockheed Martin Missiles & Space Division (LMSD) Campus. Both Building 511 and the Moffett Field Golf Course were evaluated as ineligible for the NRHP as a result of this study. Due to the highly sensitive nature of the facility and the ongoing programs, a full survey and evaluation of the LMSD Campus for potential NRHP eligibility was not

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conducted; for the purposes of this study, it will be considered a historic property in assessing potential adverse effects.

Historic properties that would be affected by the project include the NAS Sunnyvale Historic District, specifically its contributors Hangar 1; Hangar 2; Hangar 3; Building 55 (Heat Plant located between Hangars 2 and 3); Building 69 (former Inert Ammunitions Storage Building); MF1002 (aircraft parking aprons on the east and west sides of the airfield); Building 158 (Flight Operations Building & Tower on west side of airfield); Buildings 70–74, 143, and 147 (High Explosive Ammunition Magazines) and the Naval Storage Depot (a landscape feature of the district on the east side of the airfield that consists of the open and undeveloped space surrounding the magazines and enclosed by the security perimeter fencing); and various airfield features, including the runways (MF1000 and MF1001), the parallel connecting taxiways (MF1016), and the Ordnance Handling Pad (Building 442). Additionally, the Alviso Salt Pond Historic Landscape and the LMSD campus would be affected. The remaining historic properties in the APE are not anticipated to be affected by the undertaking. Table ES-1 lists the historic properties in the APE and anticipated project effects on each historic property. Based on this study, Stantec recommends a finding of adverse effect for this Undertaking.

Table ES-1. Summary of Historic Properties Affected

Bldg. #	Bldg. Name	Effects
01	Hangar 1	No Adverse Effect
02	Gymnasium/ Balloon Hangar	No Effect
05	Water Tower	No Effect
10	Heat Plant	No Effect
15	Security Station/ Fire Station and Laundry	No Effect
16	Public Works/ Locomotive Crane Shed	No Effect
17	Administration/ Admirals Building	No Effect
17a	Memorial Anchor	No Effect
18	Unmanned Aerial Vehicle Research Building/ Aerological Center	No Effect
19	Industry Partners Building/ Bachelor Enlisted Quarters	No Effect

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Bldg. #	Bldg. Name	Effects
20	Bachelor Officer Quarters	No Effect
21	Garages/ Bachelor Officers Garage	No Effect
22	Garages/ Bachelor Officers Garage	No Effect
23	Carnegie Mellon University/ Dispensary	No Effect
24	Carnegie Mellon University Storage/ Ambulance Garage	No Effect
25	Admin. Building/ Recreation Building	No Effect
26	Gate House	No Effect
32	North Floodlight Tower	No Adverse Effect
33	South Floodlight Tower	No Adverse Effect
40	Flagpole & Grounds	No Effect
46	Hangar 2	Adverse Effect (changes to setting)
47	Hangar 3	Adverse Effect (demolition; as a result of a separate Undertaking)
55	Heat Plant	No Effect
69	Inert Ammunition Storage	Adverse Effect (demolition)
70	Fuse & Detonator Magazine	Adverse Effect (changes to setting)
71, 72, 73, 74	High Explosive Magazines	Adverse Effect (changes to setting)
105	Airfield Lighting Vault	No Effect
106	Aircraft Compass Calibration Pad	No Adverse Effect

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<b>Bldg. #</b>	<b>Bldg. Name</b>	<b>Effects</b>
137, 138, 139, 140	Aircraft Fuel Storage Tanks	N/A
141	Tank Truck Filling Rack	N/A
143, 147	High Explosive Magazines	Adverse Effect (changes to setting)
158	Flight Operations Building & Tower	No Adverse Effect
329	Ultra-High Frequency/ Very High Frequency Receiver Building	No Effect
442	Ordnance Handling Pad	No Adverse Effect
454	Ultra-High Frequency/ Very High Frequency Transmission Building	No Effect
511	Weapons Station	N/A
684	Ground Maintenance Storage	N/A
686	Parachute Repair Building	N/A
934	Moffett Field Golf Course Clubhouse	N/A
A1-I1	Housing & Garages	No Effect
MF1000	Runway 32L/ 14R	No Adverse Effect
MF1001	Instrument Runway 14L/ 32R	No Adverse Effect
MF1002	Aircraft Parking Aprons	Adverse Effect (alteration and changes to setting)
MF1003	High-Speed Aircraft Fueling Pits	N/A
MF1016	Parallel & Connecting Taxiways	No Adverse Effect



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<b>Bldg. #</b>	<b>Bldg. Name</b>	<b>Effects</b>
N/A	Moffett Field Golf Course	N/A
N/A	Naval Storage Depot	Adverse Effect (changes to setting)
N/A	Alviso Salt Pond Historic Landscape	No Adverse Effect
N/A	LMSD Campus	No Adverse Effect

# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

## **Abbreviations**

APE	Area of Potential Effects
BMF	Bus Maintenance Facility
CAANG	California Air National Guard
CFR	Code of Federal Regulations
CPUC	California Public Utilities Commission
DPR	California Department of Parks & Recreation
DFSP	Defense Fuel Support Point
DLA	U.S. Defense Logistics Agency
FAA	Federal Aviation Administration
ICRMP	Integrated Cultural Resources Management Plan
kV	Kilovolt
LMSD	Lockheed Martin Space & Missile Division
MFA	Moffett Federal Airfield
NASA	National Aeronautics and Space Administration
NASA ARC	NASA Ames Research Center
NRHP	National Register of Historic Places

## **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

OHP	California Office of Historic Preservation
PG&E	Pacific Gas and Electric
PV	Planetary Ventures
SHPO	California State Historic Preservation Officer
SOI Qualifications	Secretary of the Interior's Professional Qualification Standards

# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

## **Introduction**

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## **1.0 Introduction**

Stantec Consulting Services, Inc (Stantec) has prepared this technical report on the behalf of Planetary Ventures (PV), which has entered into an Adaptive Reuse Lease with the National Aeronautics and Space Administration (NASA) for the NASA Ames Research Center (ARC) Eastside Airfield area at Moffett Federal Airfield (MFA). PV is proposing several new improvements at the Eastside portion of the Eastside Airfield area, including an expanded Bus Maintenance Facility, one private aircraft hangar, and the reuse of Building 686 for the proposed private hangar support services. Additional improvements associated with the project include construction of a new aircraft apron adjacent to the East Parallel Taxiway and utility improvements. All work associated with this proposed Eastside Airfield Improvement Project will be referred to as the “Undertaking.”

As the lead federal agency, NASA is responsible for compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), which requires federal agencies to consider effects of all activities on historic properties.

This technical report addresses the requirements of Section 106 of the NHPA, per 36 CFR Section 800, to assess the potential of adverse effects on historic properties. It includes a description of the Undertaking, the establishment of an appropriate Area of Potential Effects (APE), the identification of all historic properties within the APE, and an analysis of potential adverse effects based upon the established Criteria of Adverse Effects.

This memorandum was prepared by architectural historians Daniel Herrick, MHC, and Rebecca Riggs, MA, and archaeologist Michelle Cross, MA RPA, with review by senior architectural historian Garret Root, MA. Mr. Herrick, Ms. Riggs, and Mr. Root meet the Secretary of the Interior’s Professional Qualification Standards (SOI Qualifications) for architectural history and history, and Ms. Cross meets the SOI Qualifications for archaeology. Supporting staff on surveys include archaeologists Leven Kraushaar, MA, and Gilbert Browning, MA, all of whom meet the SOI Qualifications in their respective fields.

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Description of the Undertaking  
December 28, 2021

## 2.0 Description of the Undertaking

### 2.1 Undertaking Location

The Undertaking is located at Moffett Field, California, primarily on the Eastside Airfield portion of the property. The Undertaking involves construction of new facilities and associated infrastructure, including a Bus Maintenance Facility, a Private Hangar, and utility and circulation upgrades (see Appendix A, Figure C1.1). All elements of the Undertaking are located on the Eastside Airfield portion of MFA with the main runways and taxiways to the west, the Moffett Field Golf Course to the north, and the NASA ARC property boundary to the west (**Figure 2**). The facilities are largely centered along the Macon, Zook, and East Patrol Roads that extend north-south through the Eastside Airfield portion of MFA (**Figure 1**).

All buildings, elements, and improvements are located within the expanded boundaries of the Naval Air Station (NAS) Sunnyvale Historic District, which is determined eligible for listing on the National Register of Historic Places (NRHP).

### 2.2 Design Approach

At this time, designs for the proposed facilities are largely conceptual. While the specific details of these designs are likely to evolve as the design process moves forward, general design and performance criteria for the facilities have been established through the visioning, programming, and conceptual phases (see **Appendix A** for preliminary site layouts and **Appendix B** for Massing Simulations).

Specifically, the designs will focus on the following criteria and conditions:<sup>1</sup>

- Design new construction within the setting that is compatible but differentiated from the historic buildings.
- Consider the spatial and aesthetic relationship between the new buildings and the surrounding historic district, its contributors, significant view corridors, overall setting;
- Design buildings that exhibit scale and proportions that are consistent with the setting of the district, while also respecting the visual hierarchy of the space and the most prominent contributing structures therein;

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<sup>1</sup> These criteria and conditions were derived from National Park Service Technical Preservation Services, *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating & Reconstructing Historic Buildings*, revised by Anne E. Grimmer (Washington D.C.: Department of the Interior, National Park Service, 2017).

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## **Description of the Undertaking**

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- Employ massing in new designs that is consistent with the character of the district, while also respecting the spatial organization and visual characteristics and corridors through appropriate siting, setbacks, and solid-to-void ratios;
- Use a material palette that is compatible with the established character of the NAS Sunnyvale Historic District, particularly in relation to the contributing properties located on the eastside of the airfield;
- Employ features and forms, such as roof lines, fenestration patterns, façade articulation, and detailing that reflects upon the historic character of the historic district, while also being differentiated as new construction.

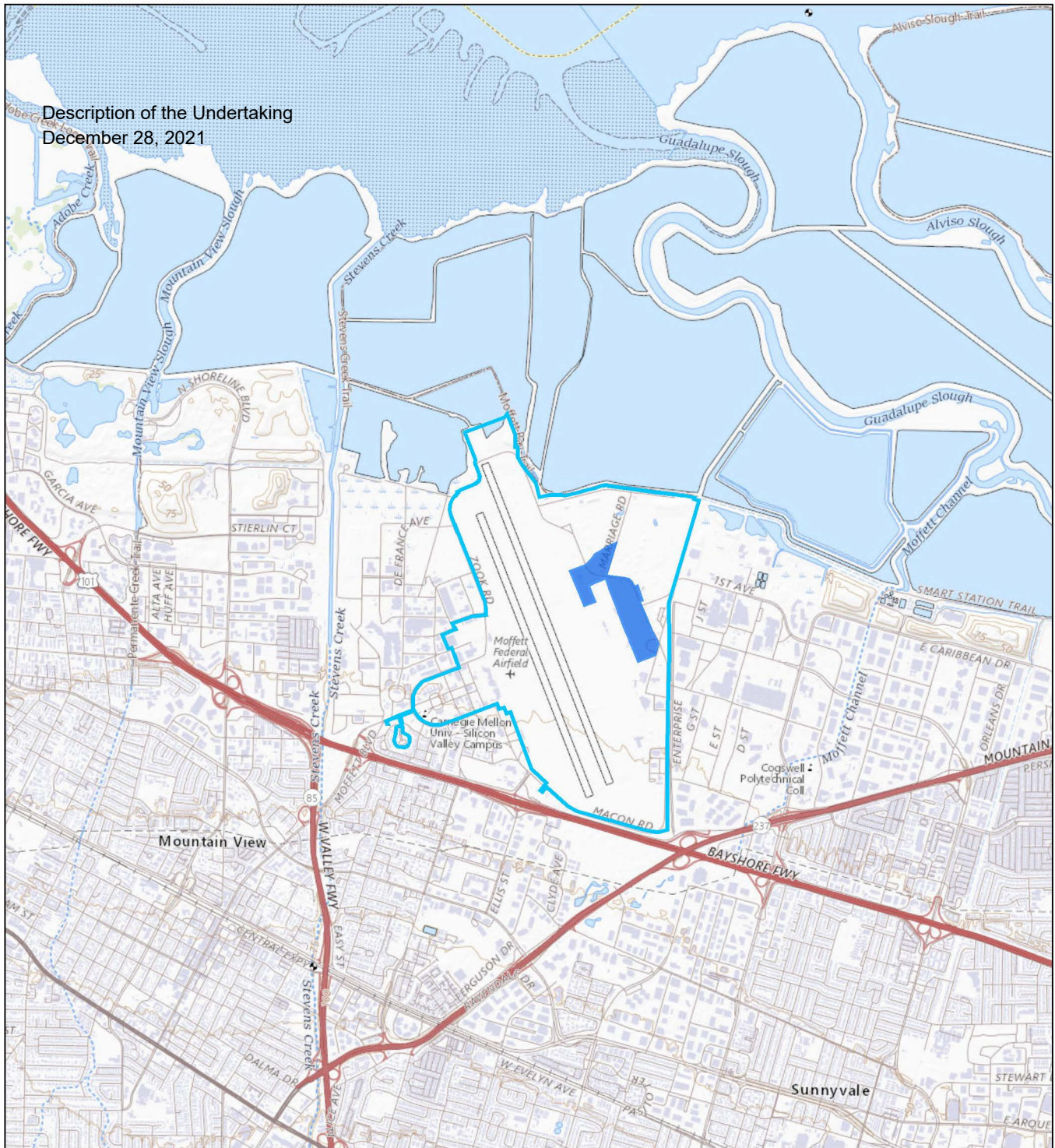
## **2.3 Bus Maintenance Facility**

The Undertaking involves expansion of the existing Google Bus services located on the eastern periphery of MFA through the construction of several new buildings and structures. The main element of the Bus Maintenance Facility (BMF) will be the maintenance and operations building, which will be centrally located in the existing bus surface parking lot (see Appendix A, Figure C1.1). Additional facilities include construction of a bus washing building, a fueling and service building, and a large network of solar panel canopy arrays across an expanded dedicated bus parking area.

### **2.3.1 Maintenance & Operations Building**

The maintenance and operations building will be located near the center of the existing bus surface parking lot, directly west of Macon Road and the existing Moffett Golf Course. The building will have a rectangular layout and will be two-stories tall, reaching an approximate height of 45 feet to 50 feet (see Appendix A, Figure C1.1 and Appendix B for massing simulations). At the ground floor, the building will largely be defined by regularly repeating bays, as well as support facilities located at the central volume of the building, such as locker rooms, offices, and storage.

# Description of the Undertaking December 28, 2021



- Undertaking Area / Project Footprint
- Expanded NAS Sunnyvale Historic District

0 2,100 4,200 Feet  
(At original document size of 8.5x11)  
1:48,000



**Project Location**  
Moffett Federal Airfield  
Santa Clara County, CA.

Prepared by KM on 2021-09-22  
TR by RR on 2021-09-23  
IR by ML on 2021-09-24

**Project**  
MFA Eastside Airfield Improvements Project  
Section 106 Technical Report

Figure No.

1

Title  
**Undertaking Location**

- Notes**
1. Coordinate System: NAD 1983 StatePlane  
California III FIPS 0403 Feet
  2. Data Sources:
  3. Background: USGS The National Map: National

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



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## **Description of the Undertaking**

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Overall, the building will feature a contemporary style with a predominantly utilitarian aesthetic. The building will have a rectangular massing, which will be broken up slightly by regularly repeating metal roll up garage bay doors along the ground floor and window openings along the second floor. At the center volume, the glazed entrance system will provide access to the main entrance lobby; a metal awning will extend over the entrances. The remainder of the ground floor will feature a concrete masonry unit wall across all façades, whereas metal panels will be installed at upper floors between the regularly repeating, inset glazed and spandrel windows.

The building will be surrounded by surface bus parking, as well as employee automobile parking (see description below in **Section 2.1.3**). Limited landscaping with a simple plant palette and site furnishings will likely be located in the vicinity of the main entrances.

### **2.3.2 Bus Washing Building**

The bus washing building will be a simple, rectangular garage-like building, located towards the northern end of the existing bus surface lot (See Appendix A, Figure C1.1). The building will be approximately 20 feet tall, constructed of concrete masonry units, and will feature a flat roof profile with simple parapet wall. The building will have a rectangular footprint; it will be oriented parallel with the maintenance and operations building, as well as the existing Hangars 2 and 3 and other features of the airfield. The building will feature large metal roll-up doors at the north and south façades, which will open to the bus washing lanes that define the main volume. The building will also house typical storage, mechanical, and office space, which will be accessed by simple hollow metal doors at both the north and south façades

### **2.3.3 Bus Parking Lot**

The existing bus parking lot will largely be repaved and reconfigured. Along the eastern portion, the existing pavement will be removed and replaced, whereas the western portion of the bus parking, which is defined by the gridded paved surface of the former aircraft parking apron, will be retained and utilized in its existing condition (see Appendix A, Figure C1.1). To increase the efficiency and safety of bus circulation, some existing features will be removed to allow for the expanded and reconfigured bus parking and circulation including the existing temporary fencing, prefabricated offices, and Building 69 located at the northeast corner of the existing bus parking lot. New pavement will be painted to accommodate the reconfigured parking and circulation paths. The temporary bus maintenance shelters will also be removed, and this area will be utilized for expanded bus parking.



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New automobile parking for bus employees will be paved at the southeast end of the proposed facility, at the existing fuel farm facility (see Appendix A, Figure C1.1). The existing fuel farm equipment will be removed, and the area will be repaved and reconfigured to accommodate the parking lot. At this location, as well as the location of the replaced pavement throughout the bus parking lot, the depth of disturbance will not exceed the pre-existing built elements. Where new paving is required in areas not disturbed, this will likely occur at an approximate depth of 2 feet-3 feet below grade.

## **2.3.4 Solar Panel Canopy & Bus Charging**

In support of future electrification of the Google Bus fleet, the Undertaking will include installation of several large-scale arrays of photo-voltaic solar panels across much of the bus surface parking area, including portions of the former aircraft parking apron. An array of approximately 26,000 solar panels will be installed over the bus parking stall areas atop a free-standing solar canopy structure that will be approximately 20 feet tall. The solar structures will cover approximately 15 acres. The photo-voltaic panels will have an anti-glare coating and the installation of the solar panels will support the electrification of the bus fleet with the goal of installing approximately 300 electrical charging stations.

In order to install the panels, small select areas of the existing paved surface will be cut in squares to allow installation of the steel support posts. The posts will be regularly spaced and will likely be constructed to an approximate depth of 15 feet below grade, but no more than 25 feet below grade.

Additional bus electrification elements, namely charging stations, are still under development at this time. An estimated 300 additional charging stations will be required in support of the fleet electrification. Additional elements will be utilitarian and typical of electrical vehicle charging stations and support infrastructure.

A 20 mega-watt (MW) Battery Energy Storage System (BESS) with 80 MWh of total capacity will be installed on the site east of the existing substation (see Appendix A, Figure C1.1). Solar energy will be collected and converted through the panels and stored in the BESS to support the electrification of the fleet. The BESS will connect to the Moffett substation through underground conduit. While a final design for the BESS is yet to be determined, it is anticipated to be similar to the Tesla Megapack, which are 8.5 feet tall and occupy roughly 15,300 gross s.f. (0.35 acre). The BESS will include batteries, transformers, switchgear/control cabinets, and a structural catchment basin for secondary containment. The batteries and catchment basin will be supported by an 8-inch-thick concrete slab. Fire suppression for the BESS will be provided via a self-contained fire safety system, which will include smoke detection, a suppression agent

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reservoir, and a delivery system appropriate for the specific technology chosen and as required by NASA Ames Fire Marshal. Up to 0.7 acre may be disturbed to accommodate the proposed BESS (see Appendix A, Figure C1.1). The whole system will be enclosed by an 8-foot to 10-foot chain-link fence. Vehicle impact bollards will be installed to reduce the potential for vehicle impacts to the batteries during operation.

## 2.4 Private Hangar

The private hangar will be located on the Eastside Airfield portion of MFA towards the northeast corner of the airfield, directly east of the East Parallel Taxiway, west of Zook Road, and north of the East Aircraft Parking Apron (see Appendix A, Figure C1.2 and **Figure 7**). Currently, the project site is predominantly occupied by the Ground Equipment Storage (Building 684), Parachute Repair building (Building 686), and the existing service yard. To develop the proposed hangar, Building 684 will be demolished. Associated site upgrades include construction of automobile parking, aircraft parking apron adjacent to the East Parallel Taxiway, utility upgrades, and the adaptive reuse and repurposing of Building 686 to provide support services such as office space, administrative space, meeting/phone rooms, shop space, storage, and utility rooms. No exterior alterations will be made to Building 686, with the exception of maintenance activities (e.g., new paint).

One private hangar will be constructed over an approximately 60,000 square-foot (s.f.) area and up to 74.5 feet tall (see Appendix A, Figure C1.1 for preliminary figures and Appendix B for massing simulations). The hangar will be oriented north to south with a controlled secure entrance for employees and patrons on the north and entrance for planes on the south. Administrative and shared spaces will be located in Building 686, directly north of the private hangar. Access between the hangar and Building 686 will be through a paved open walkway. The hangar will be constructed as a prefabricated metal building that would have a combination of insulated metal panels and insulated doors and glass, and it will be assembled onsite. A generator will be provided for emergency and stand-by power.

The hangar would require an elevated construction of 12 feet above sea level to stay above the 100-year floodplain, which is at 11 feet above sea level. The elevated construction proposed at 12 feet above sea level would equate to an approximate increase in 5 feet above the existing grade at the hangar location. Depth of disturbance associated with the hangar is unknown at this time and will be determined during ongoing design phases, but will likely be a maximum depth of 50 feet below grade.

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## **2.4.1 Access & Automobile Parking**

The hangar area will include 43 parking spaces located on the east side of the proposed private hangar and Building 686 that would be accessible by Zook Road via an existing road. The parking spaces would include Americans with Disabilities Act compliant spaces and electric vehicle charging spaces. A new Airport Operation Area (AOA) fence similar to the existing AOA fence on MFA would be installed to separate the apron from the proposed parking and private hangar entrance. The parking area will be typical asphalt concrete with an approximate depth of disturbance of 3 feet below grade. The electric vehicle charging stations will be typical utilitarian units and approximate height of 5 feet above grade. Utility upgrades associated with the charging stations will tie into the larger electrical upgrades via new conduits (See Utilities description below in Section 2.6.1).

## **2.4.2 Aircraft Apron**

A portion of the existing concrete apron will be replaced by a new apron. The new apron will be approximately 324,100 s.f and will be constructed with reinforced Portland cement concrete. Approximately 74,400 s.f. of the apron will be repaved and resurfaced. Removal of the old apron will comply with state and federal regulations regarding removal and disposal of excavated material. The proposed apron will extend from the finished floor level of the hangar and slope to the west, east, and south to meet the existing grades. The new apron will include lighting, signing, and striping that will follow Federal Aviation Administration (FAA) guidelines for aprons, safety areas, parking limit lines, and taxiways.

## **2.5 Preconstruction Activities**

### **2.5.1 Geotechnical Investigations**

Geotechnical investigations of the respective building footprints will inform the proposed Undertaking's designs. Typical geotechnical boring will involve a boring truck being driven to the required location. The bores will have a maximum diameter of 8 inches and will have an approximate depth between 15 feet to 50 feet below grade. The exact number of borings at each location are unknown but will likely range between 10 to 25 locations within each footprint, depending on the size of the proposed facility.

Following the sampling, the area where work occurs, whether paved or exposed ground, will be restored to its pre-existing conditions.

# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

Description of the Undertaking  
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## **2.5.2 Utility Investigations**

Prior to construction, utility investigations throughout the project area may be required. Initially, this will involve non-invasive ground-penetrating radar techniques for approximate utility siting. Selective potholing will be implemented to physically confirm the location and condition of the subject utility. Potholing requires the removal of a small slot trench or squared area of approximately 1 s.f. being opened in the surface. A vacuum truck will remove existing materials to the depth of the utility to expose the utility; material removed may extend to a depth of 12 inches below the utility. Following the potholing process, the area of disturbance will be restored to its pre-existing condition with reused soil.

## **2.6 Site Upgrades**

### **2.6.1 Utilities**

The utility infrastructure required to support the proposed facilities is available at the perimeter of the site. Where feasible, the proposed facilities will use the existing infrastructure; however, where lines are beyond their usable design-life, new utility alignments will be installed and existing utilities will be weather capped, replaced, or extended as necessary, in coordination with NASA. The exact nature of construction will be determined through subsequent design phases, although new utilities are anticipated to be constructed via open trenching. Proposed utility lines will likely be installed approximately 2.5 feet to 8 feet below grade via 4 foot to 6 foot wide trenches; however, the exact depth and width of ground disturbance would vary depending on the utility and site conditions, with a likely maximum depth of 15 feet below grade (see Appendix A, Figure C1.5 for preliminary alignments).

#### **2.6.1.1 Water**

There is an existing 8-inch water line south of Building 686 and north of the proposed private hangar. A new 3-inch line would connect to this existing line to provide domestic water to the private hangar, and a 6-inch line would provide water for fire. No changes to existing water lines would occur for Building 686. A new 3-inch water line would be installed within the BMF footprint to serve the Maintenance and Operations Building via an existing water line east of Hangar 3 (see Appendix A, Figure C1.4 for preliminary alignments).

## **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

Description of the Undertaking  
December 28, 2021

### **2.6.1.2 Reclaimed Water**

A reclaimed water system is being considered as optional to serve the landscape areas for the BMF. No landscaping is proposed for the private hangar. Building 686 is not served by reclaimed water.

### **2.6.1.3 Stormwater**

The BMF will drain into existing storm drains on and around the Project site, eventually draining into the Marriage Road ditch. New 12-inch storm drains will be constructed east, north, and west of the private hangar that will then discharge to the existing culvert via bioswales into the Marriage Road ditch. A storm water inlet will be installed closer to the hangar doors on the south that will connect to the proposed bioswale via 12-inch storm drain (see Appendix A, Figure C1.4 for preliminary alignments)

### **2.6.1.4 Sewer**

A new 6-inch sanitary sewer line will connect to the existing 6-inch sewer line in Macon Road east of the private hangar. The BMF will connect to the existing sewer lines to the west that will eventually connect to the existing sewer line in Macon Road. Both the private hangar and BMF will gravity discharge to the eastern main along Marriage Road that discharges to a pump station and force main located at Building 56 in the golf course area (see Appendix A, Figure C1.4 for preliminary alignments).

### **2.6.1.5 Electrical**

A new loop feed system will be provided via existing ducts from the Moffett substation. The private hangar will be served by a new 12 kilovolt (kV) primary feeder that will extend north from the existing line north of Hangars 2 and 3. The BMF will be connected to the existing primary feeder that traverses the BMF in the east-west direction. To improve the reliability and operational risks with the existing Moffett substation, the substation would either be refurbished or replaced in-kind to avoid an interruption in service. The substation improvement would be completed in conjunction with installation of the proposed BESS. If the existing substation is replaced in-kind, then the existing substation would be decommissioned and demolished shortly after construction. The new substation would be located adjacent to the existing substation, likely to the south on approximately 0.5 acre. The BESS would provide adequate capacity to power up to 300 buses; therefore, no capacity improvements to the substation would be needed (See Appendix A, Figure C1.5 for preliminary alignments).

# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

## **Background**

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### **2.6.1.6 Telecommunication**

The proposed facilities will be connected to existing outside service providers' networks and there will be a private network through proposed telecommunication lines. The BMF will connect to the existing duct bank along Macon Road. The proposed telecommunications line for the private hangar would be located in the same trench as the electrical duct bank and would connect to the existing telecom line north of Hangars 2 and 3 (see Appendix A, Figure C1.5 for preliminary alignments).

## **3.0 Background**

Originally part of a Mexican land grant known as Rancho Posolmi, the land that is now NASA ARC has been in continuous use since 1844. Use of the land as agricultural fields for cattle grazing continued until the US Navy expressed interest in developing the land as an airfield. They were able to secure ownership of the land and established NAS Sunnyvale on August 2, 1931, having purchased it from a local civic group that organized the sale for \$1. Planned as an airfield for the Navy's dirigible rigid airship program, Hangar 1 and the campus around it were completed in 1933. The original NAS Sunnyvale was composed of Spanish Colonial Revival style buildings that were sited on a City Beautiful plan. The Navy used the facilities until they terminated their dirigible program in 1935 and transferred the airfield to the US Army Air Corps, who enlarged the runways and used the site as their West Coast training headquarters until 1942. During this time, a portion of the property was also used by the National Advisory Committee for Aeronautics (NACA), the precursor agency to NASA, who built the Ames Aeronautical Laboratory in 1939, including hangars and wind tunnels for research and testing.

Following the bombing of Pearl Harbor, the Navy took the facility back and renamed it US NAS Moffett Field. During the war they used it as the base for airships that patrolled the Pacific Coast and as a training center for airship pilots and also constructed Hangars 2 and 3 in 1943. During World War II, they expanded Moffett Field, purchasing 225 acres of land east of the airfield and enlarging the runways again. They continued enhancing the airfield in the post-war era, elongating the runways for newer, larger aircraft. With the onset of the Korean War in 1950, Moffett Field was used to train jet pilots and as the home base for Navy fighter jets and the facilities at the airfield were expanded again, with new buildings constructed around the perimeter of the property and both runways extended. By 1962, operations at Moffett Field were switched from jet to antisubmarine warfare, focusing on experimental antisubmarine aircraft, namely the P-3 Orion. The P-3 Orion Anti-Submarine mission would continue to operate at the

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Area of Potential Effects  
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airfield throughout the remainder of the Cold War-era. The mission primarily used the existing structures and buildings, specifically the former dirigible hangars, although several new training and support buildings were constructed during the Cold War period.

Use of Moffett for training operations continued until 1994 when it was closed to military operations and the property was transferred in its entirety to NASA (formerly NACA) for use as an experimental test site. Moffett Field's primary purpose turned to advancing airborne science and technology, including space travel. After the full transfer of the field to NASA, a portion of it including hangars and munitions storage areas was utilized by the California Air National Guard (CAANG) 129th Rescue Wing.<sup>2</sup>

## 4.0 Area of Potential Effects

The APE is located within the expanded NAS Sunnyvale Historic District on the northeast side of the airfield (**Figure 2**). For the current Undertaking, the APE boundaries include the majority of the Eastside Airfield area of MFA, as well as the boundaries of the expanded NAS Sunnyvale Historic District.

The area with the potential for direct physical alterations, referred to as the project footprint, is primarily defined by the Undertaking area where work is occurring, specifically at the proposed location of the BMF and the private hangar. The project footprint will have vertical boundaries where ground disturbing activities will occur; this accounts for the potential disturbance of any archaeological resources. At proposed facilities, the vertical boundaries will have a maximum depth of 50 feet, which coincides with the geotechnical investigation depths. At the proposed aircraft apron, the vertical boundaries are approximately 8 feet below grade, which accounts for any utility upgrades that will occur at this location.

The broader boundaries of the APE account for potential indirect effects, such as visual and atmospheric alterations to the historic setting and sense of place for historic properties. Therefore, these boundaries extend beyond the project footprint where work is occurring. As stated previously, the APE boundaries primarily coincide with the northern boundary defined by the levees forming the shoreline along San Francisco Bay. The western boundary extends south along the perimeter fence of the airfield before following the boundaries of the expanded NAS Sunnyvale Historic District to

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<sup>2</sup> AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," prepared for NASA Ames Research Center (November 26, 2013), 3-2 – 3-7.

## **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

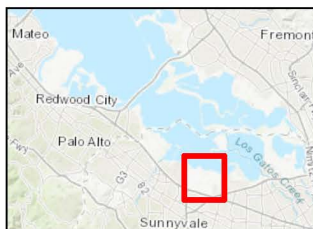
### **Area of Potential Effects**

December 28, 2021

include the Shenandoah Plaza area of MFA to the intersection of Wescoat and Dailey roads. The western boundary then shifts south along Dailey Road towards the US Highway 101, which forms the southern boundary. The eastern boundary extends north from the US Highway 101 and east along the CAANG cantonment area, following it to the eastern perimeter of MFA to 5<sup>th</sup> Avenue in Sunnyvale, California. Here the eastern boundary jogs east into the Lockheed Martin Missile and Space Division (LMSD) campus, where it shifts north along H Street and continues north towards the levees at San Francisco Bay.

The location and size of the APE accounts for both potential direct and indirect effects to any historic properties, particularly those within the boundaries of the expanded NAS Sunnyvale Historic District.





- Notes**
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
  2. Data Sources:
  3. Background: Source: Esri, Maxar, GeoEye,

- Undertaking Area / Project Footprint
- Area of Potential Effects (APE)
- Expanded NAS Sunnyvale Historic District

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**Project Location**  
Moffett Federal Airfield  
Santa Clara County, CA.

Prepared by KM on 2021-09-22  
TR by RR on 2021-09-23  
IR by ML on 2021-09-24

**Project**  
MFA Eastside Airfield Improvements Project  
Section 106 Technical Report

**Figure No.**  
**2**

**Title**  
**Undertaking Area of Potential Effects (APE)**

**The following content was redacted from this public posting:**

Section 5.1 Archaeological



# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Identification of Historic Properties  
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**Photograph 9: North shoulder along Macon Road, looking northwest towards Marriage Road and Building 511 with driving range located at right.**

## 5.1.5 Summary

Based on the results of the intensive pedestrian survey conducted by Stantec for the current Undertaking and the recommendations of the ARS and the WSA 2017 survey, there are no known archaeological historic properties in the project footprint. Previous NAHC and Sacred Land Files searches conducted for the ARS and by WSA and a Sacred Land Files search conducted by NASA ARC in 2021 indicate that there are no known archaeological properties in the Project area. Previous Native American consultation with the five non-federally recognized tribes identified by the NAHC in the ARS did not reveal the existence of any archaeological properties. Despite the lack of known archaeological resources and extensively disturbed nature of the Undertaking Area, there is the potential for unknown archaeological materials to be extant.

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

## Identification of Historic Properties

December 28, 2021

## 5.2 Built Environment

In recent decades, numerous studies have documented and evaluated the historical significance of the built environment at MFA. The following outlines historic surveys and studies relevant to the Undertaking and the associated historic properties identified within the Undertaking APE.

### 5.2.1 Relevant Previous Studies

#### 5.2.1.1 NRHP Listed NAS Sunnyvale Historic District

In 1994, the NAS Sunnyvale Historic District was identified and listed on the NRHP. The discontinuous historic district comprised the original 1930s portion of MFA, also known as Shenandoah Plaza, which centered around Hangar 1 and the western portion of the MFA property, as well as the Hangars 2 and 3 precinct, located on the eastern side of the airfield.<sup>3</sup> The historic district was determined significant under Criterion A and Criterion C for its associations with the development of US Naval aviation prior to World War II, and for its unifying architecture exhibited by the collection of Spanish Colonial Revival architecture and for the significant engineering exhibited by Hangar 1, as well as Hangars 2 and 3. The historic district is listed with a period of significance spanning 1930 to 1943, which coincides with the construction of the Shenandoah Plaza portion of MFA, as well as Hangars 2 and 3.

#### 5.2.1.2 Historic Property Survey Report for the NASA Ames Research Center, Moffett Field, California (2013)

In 2013, AECOM prepared the *Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California* (HPSR), which identified the NRHP-eligible expanded NAS Sunnyvale Historic District that encompassed the entirety of MFA, primarily the runway network and buildings directly associated with the operation of the airfield and the significant missions. The historic district was identified as significant under criteria A (events) and C (architecture) with a period of significance spanning from 1930-1961. While SHPO concurred with the revised boundaries of the expanded historic district on June 6, 2013, the contributing status of specific properties to the district has not received formal concurrence. However, California Office of Historic Preservation (OHP) staff and NASA have agreed to recognize the identified historic district and its contributors outlined in the 2013 AECOM HPSR as historic

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<sup>3</sup> National Park Service, "National Register of Historic Places Registration Form – US Naval Air Station Sunnyvale, California," Reference #94000045, prepared by Bonnie Bamberg (1991, updated 1994).

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Identification of Historic Properties  
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properties for the purposes of Section 106 consultation.<sup>4</sup> As part of the HPSR, new resources within the expanded district boundaries, such as Building 69, were recorded. While the HPSR served as the initial recordation of Building 69, AECOM did not evaluate Building 69 for its significance as an individual resource or contributor to the NAS Sunnyvale Historic District. Building 69 was evaluated for its significance as an individual resource and as a contributor to the NAS Sunnyvale Historic District by Page & Turnbull in their *Proposed Expanded NAS Sunnyvale Historic District Historic Property Survey Report* in 2018. The recordation and evaluation of Building 69 (see Appendix C of this report) concludes that, while Building 69 is a contributor to the expanded NAS Sunnyvale Historic District, the building is not individually eligible for listing on the NRHP. The current Undertaking's location is within the boundaries of the expanded NAS Sunnyvale Historic District. There are several contributing properties and character-defining landscape features located within the current APE (**Figure 6**).

## 5.2.1.3 Cold War-Era Resources Survey (1999)

In 1999, a comprehensive historical survey of Cold War-era resources at MFA was conducted by Alexandra C. Cole of Science Applications International Corporation. The resulting document, the *Inventory and Evaluation of Cold War Era Historical Resources* (Cold War Survey), outlines a robust historic context of Naval missions at MFA during the cold-war from 1946 to 1989, focusing specifically on the P-3 Orion Anti-Submarine operations. At the time of evaluation, many properties did not meet the 50-year age threshold required for NRHP eligibility, so many properties were evaluated under Criteria Consideration G: "A property achieving significance within the past 50 years if it is of exceptional importance."<sup>5</sup> As part of the survey, 148 buildings and structures were documented and evaluated and NASA requested concurrence from SHPO on the non-eligibility of the Cold War Era buildings and structures at MFA (it is unknown if concurrence from SHPO was received).<sup>6</sup>

Resources identified in the Cold War Survey and within the current APE include three buildings: Building 511, Building 684, and Building 686.

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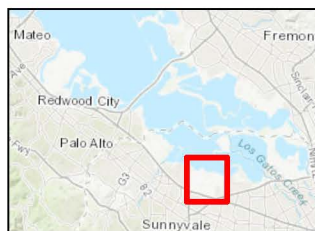
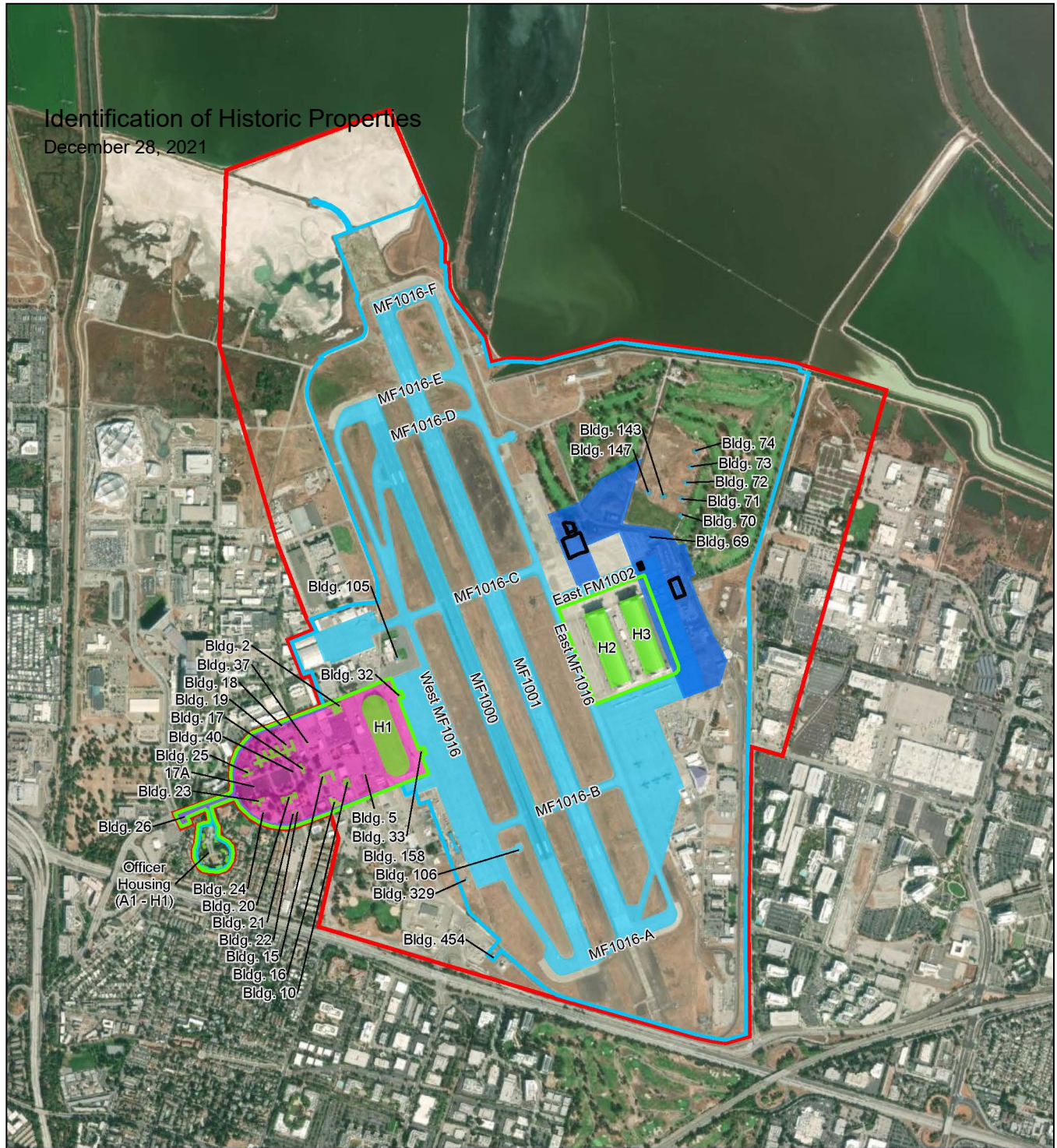
<sup>4</sup> SHPO letter to Keith Venter, Historic Preservation Officer at NASA ARC, "Section 111 Outlease for Hangar One and Moffett Federal Airfield, NASA Ames Research Center, Moffett Field CA" SHPO Reference: NASA\_2013\_0417\_001 (June 6, 2013).

<sup>5</sup> National Park Service, *National Register Bulletin: How to apply the National Register Criteria for Evaluation* (rev.2002), accessed August 20, 2019, <http://nps.gov/nr/publications/bulletins/nrb15/Index.htm>

<sup>6</sup> NASA ARC letter to Daniel Abeyta, State Historic Preservation Officer, "Cold War Era Survey, Moffett Federal Airfield," SHPO Reference: JFF: 19-12 (October 1, 1998).



# Identification of Historic Properties December 28, 2021



**Notes**  
1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet  
2. Data Sources:  
3. Background: Source: Esri, Maxar, GeoEye,

- Undertaking Area / Project Footprint
- Area of Potential Effects (APE)
- Proposed Undertaking Complex Footprint
- NAS Sunnyvale Historic District Boundary (NRHP Listed)
- Expanded NAS Sunnyvale Historic District Boundary (NRHP Eligible)
- NAS Sunnyvale Historic District Contributing Property (NRHP Listed)
- Expanded NAS Sunnyvale Historic District Contributing Property (NRHP Eligible)
- Shenandoah Plaza

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(At original document size of 8.5x11)  
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**Project Location**  
Moffett Federal Airfield  
Santa Clara County, CA.

Prepared by KM on 2021-09-26  
TR by RR on 2021-09-27  
IR by ML on 2021-09-27

**Project**  
MFA Eastside Airfield Improvements Project  
Section 106 Technical Report

**Figure No.**  
6

**Title**  
Expanded NAS Sunnyvale Historic District

## **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

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### **5.2.1.4 Historic Property Survey Report - Defense Fuel Support Point Closure Project (2016)**

As part of Section 106 Consultation for the DFSP Closure Project, the AECOM Historic Property Survey Report included a survey of the built environment properties, conducted by qualified architectural historians. This intensive survey included physical descriptions, historic contexts and property-specific histories, and full evaluations for potential NRHP eligibility for the fuel storage tanks (Buildings 137-140) and various elements and structures associated with the existing fuel farm facility. This survey also involved a re-evaluation of MF1003, Building 69, and the Tank Truck Fueling Rack (Building 141), which were previously identified as potentially eligible in the HPSR.

All of the surveyed built environment properties were recommended as not eligible for listing on the NRHP as either individual resources, or contributors to larger historic districts. On June 30, 2016, SHPO largely concurred with these findings that fuel storage tanks, elements of the fuel farm facility, MF1003, and Building 141 were all ineligible for the NRHP and did not qualify as historic properties. However, SHPO disagreed with the recommendation that Building 69 was not a contributor to the broader expanded NAS Sunnyvale Historic District. SHPO requested that the property be treated as historic for the purposes of the DFSP Section 106 Consultation, given that no adverse effect would occur at the property regardless of status. Although further information and analysis regarding its historic status was also requested, at the time, Building 69 was considered a historic property as a contributor to the expanded NAS Sunnyvale Historic District. Building 69 was then evaluated for its significance as an individual resource and as a contributor to the NAS Sunnyvale Historic District by Page & Turnbull in their *Proposed Expanded NAS Sunnyvale Historic District Historic Property Survey Report* in 2018. The recordation and evaluation of Building 69 (see Appendix C of this report) concludes that, while Building 69 is a contributor to the expanded NAS Sunnyvale Historic District, the building is not individually eligible for listing on the NRHP.

### **5.2.1.5 Alviso Salt Pond Historic Landscape (2008)**

The Alviso Salt Pond Historic Landscape, or Alviso Salt Pond Historic District, is a large cultural landscape defined by the extensive network of salt ponds located across the southern shoreline of San Francisco Bay. Originally identified in 2008 by US Fish and Wildlife Service cultural resources staff, the Alviso Salt Pond Historic Landscape includes 25 salt ponds, extending over 9,600 acres of the southern shoreline. The

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

## Identification of Historic Properties

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landscape is largely defined by the extensive network of earthen levees, which divide the salt concentrating ponds into their distinctive spatial organization.<sup>7</sup>

The landscape was found to be eligible for listing on the NRHP under criterion A at the local level for its association with the Solar Salt Industry and the industrial development of the region during the early 20<sup>th</sup> century. It has an identified period of significance from 1920 to the 1950s, which corresponds with the development of the Solar Salt Industry in the South San Francisco Bay Area.

### 5.2.2 Stantec Built Environment Survey (2019)

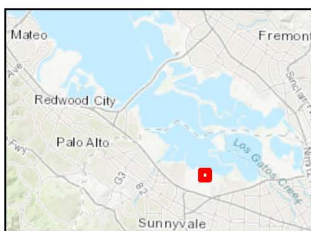
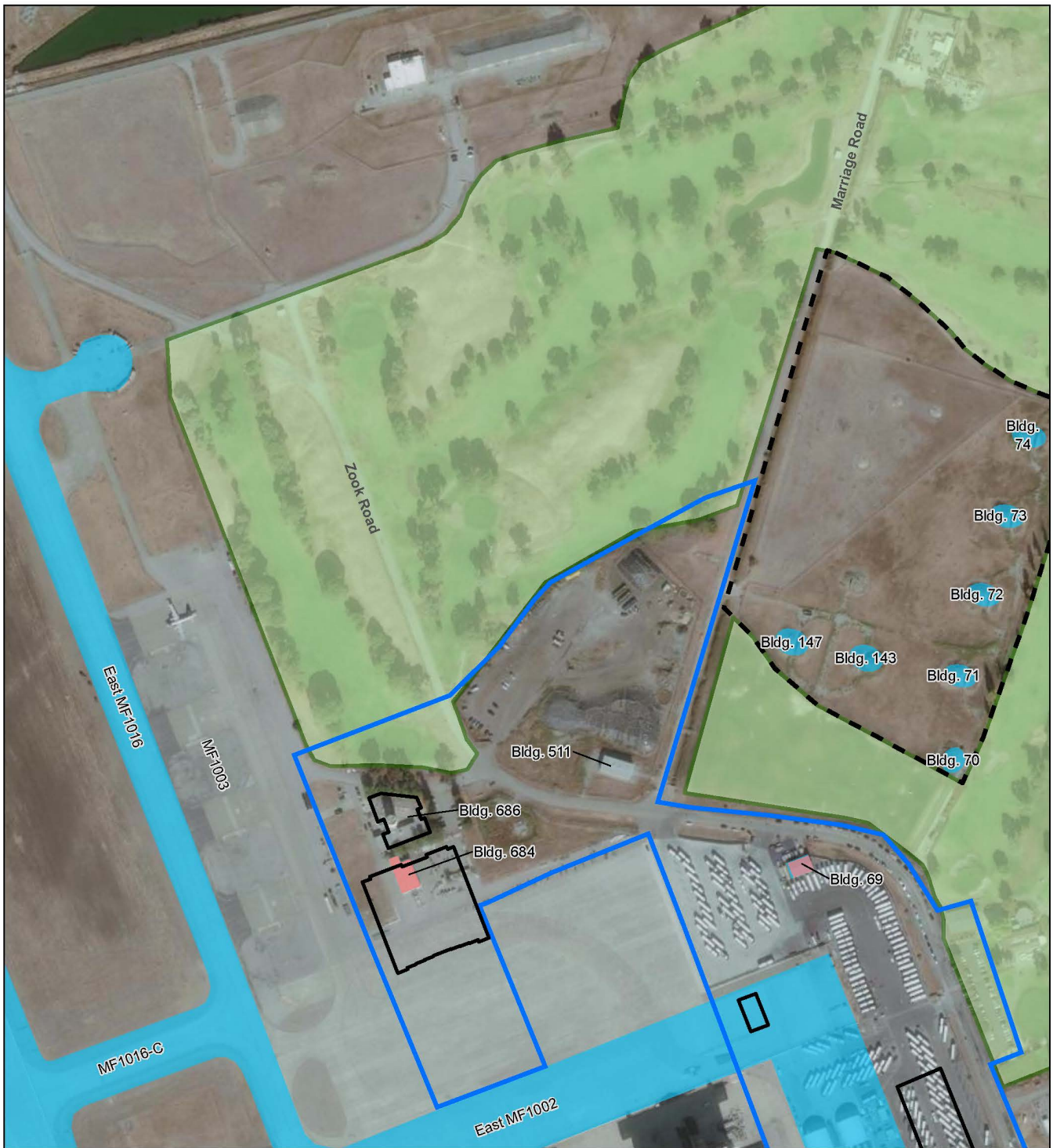
In March 2019, Stantec architectural historians Daniel Herrick, MHC and Rebecca Riggs, MA, both of whom meet the SOI Qualifications for architectural history and history, conducted a survey of the Undertaking area and northern section of the APE, focusing specifically on Buildings 511, 686, 684, and the Moffett Field Golf Course (**Figure 7**). Properties were documented using digital photographs and field notes to capture onsite observations. Additional online and local archives and repositories research was conducted to supplement existing documentation.

The following outlines a brief physical description for each property, as well as background, historic status, and assessment regarding whether the property requires historic evaluation.

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<sup>7</sup> US Fish & Wildlife Service, "US Fish & Wildlife Service Project #FWS040721A Historic Properties Treatment Plan for the Salt Works within the South Bay Salt Pond Restoration Project at the Alviso Don Edwards San Francisco Bay National Wildlife Refuge" in Appendix F of *South Salt Pond Restoration Project, Eden Landing Phase 2 – Environmental Impact Report* (April 2019): Attachment 2, pg.13-18.





**Notes**  
1. Coordinate System: NAD 1983 StatePlane  
California III FIPS 0403 Feet  
2. Data Sources:  
3. Background: Source: Esri, Maxar, GeoEye,

- Undertaking Area / Project Footprint
- Proposed Undertaking Complex Footprint
- Naval Storage Depot
- Buildings to be Demolished
- Expanded NAS Sunnyvale Historic District  
Contributing Property (NRHP Eligible)
- Moffitt Field Golf Course

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**Project Location** Prepared by KM on 2021-09-26  
Moffett Federal Airfield  
Santa Clara County, CA. TR by RR on 2021-09-27  
IR by ML on 2021-09-27

**Project**  
MFA Eastside Airfield Improvements Project  
Section 106 Technical Report

Figure No.

**7**  
**Built Environment Properties Slated  
for Removal**

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

## Identification of Historic Properties

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### 5.2.2.1 Building 511 – Weapons Station

#### *Description*

Constructed in 1968, Building 511 originally served as a Missile Integration Facility used in the assembly of bombs and missiles in support of the P-3 Orion Anti-Submarine mission. Building 511, located at the eastern side of the airfield, has a rectilinear plan, and is of prefabricated steel construction (**Photograph 10**). The Butler-type building has a low-pitch, front gable roof. There are large steel sliding doors on the east and west elevations of the building and a door with a window located next to the sliding doors on the east elevation. There are eight sliding windows on the building, four on the north elevation, and four on the south. Beneath the windows there are metal air vents, three on the north elevation, and three on the south. The building is surrounded by chain-link fencing.



**Photograph 10: North façade of Building 511, looking east.**

#### *Historic Status*

Building 511 was originally evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and found not to exhibit exceptional historical significance. The building was noted as having associations with the P-3 Orion Anti-Submarine mission as a weapons assembly facility, however, this is a secondary support function of the mission. Constructed in 1968, the building is now older than 50 years; the property



# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Identification of Historic Properties  
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required additional evaluation per the NRHP significance criteria for potential eligibility (See **Section 5.2.2.6**).

## 5.2.2.2 Building 684 – Ground Equipment Storage

### *Description*

Constructed in 1984 as a ground equipment storage facility, Building 684 is a simple, single-story building (**Photograph 11**). It features concrete masonry unit construction, is rectilinear in plan, and is capped with a flat roof with a vertical stack-bond scored parapet wall that extends across all façades. Fenestrations are primarily located on the west façade, facing the airfield, and include metal roll-up vehicle doors, and flush metal pedestrian doors, either single or paired. Other façades feature similar fenestration, although in reduced numbers. The few windows included in the building are metal framed and fixed.



**Photograph 11: Primary west façade of Building 684 with roll-up metal garage, looking east.**

### *Historic Status*

Building 684 was originally evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and was found not to exhibit exceptional historical significance.

## MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

### Identification of Historic Properties

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The building, which is a typical US Navy support structure and constructed in 1984, is still under 50 years and does not require additional evaluation. Therefore, Building 684 does not qualify as a historic property under Section 106.

#### 5.2.2.3 Building 686 – Parachute Repair Building

##### *Description*

Constructed in 1984 as a parachute repair building, Building 686 is an irregular shaped building that is predominantly single-story with a large, concrete cylindrical tower at least two stories tall at the center of the building (**Photograph 12**). Fenestration is limited throughout and includes fixed picture windows and paired metal pedestrian doors located on the east façade.



**Photograph 12: West façade of Building 686 with prominent cylindrical tower located at center, looking east.**

##### *Historic Status*

Building 686 was evaluated in 1999 as part of the Cold War Survey under Criteria Consideration G and was found not to exhibit exceptional historical significance. The building, which was constructed in 1984 as a typical US Navy support structure, is still under 50 years and does not require additional evaluation. Therefore, Building 686 does not qualify as a historic property under Section 106.

## MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

Identification of Historic Properties  
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### 5.2.2.4 Moffett Field Golf Course

#### *Description*

The Moffett Field Golf Course is an 18-hole, par 72 golf course, located at the northeastern corner of MFA, north of Hangars 2 and 3, and south of San Francisco Bay (**Photograph 13**). Originally constructed in 1959 as a 9-hole golf course, the recreational property is situated around WWII and early 1950s-era High Explosive Magazine Bunkers which were concentrated on the northeast corner of the airfield. Development around the High Explosive Magazines necessitated a low-density use, which the golf course met that threshold.

The original 9-hole golf course was designed by Bob E. Baldock, a prominent California-based golf course architect who designed hundreds of courses throughout the United States. The original 9 holes were located at the eastern portion of the existing site. Around 1968, the course was expanded to its current 18-hole configuration, the expansion included removal of several World War II-era munitions loading circles, which were arranged in an arc at the western portion of the site. The back-nine was designed by Robert Muir Graves, another notable golf course architect who was responsible for a number of noteworthy and champion golf courses throughout the United States and Canada. Based upon several aerial photographs, the golf course does not appear to have undergone changes since it was expanded in 1968. The golf course still surrounds the High Explosive Magazines, which consists of Igloo type magazines, within a perimeter fence.

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

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**Photograph 13: Aerial photograph of the Moffett Field Golf Course looking south. Note the magazines and surrounding undeveloped area at upper left.<sup>8</sup>**

### *Historic Status*

The Moffett Field Golf Course does not appear to have been previously evaluated for eligibility in the NRHP. Therefore, the Moffett Field Golf Course requires additional evaluation (See **Section 5.2.2.6**).

#### **5.2.2.5 Naval Storage Depot**

While the Moffett Field Golf Course has not been formally evaluated, the HPSR and a supplemental NASA report suggest that portions of the open and undeveloped areas of the golf course have associations with the Naval Storage Depot, which is historically part of the design and spatial organization of the district-contributing High Explosive Magazines (Buildings 70-74, 143, & 147) located at the northeast corner of MFA.<sup>9</sup> Specifically, the HPSR indicates that the area now referred to as the Naval Storage Depot is characterized by an expanse of undeveloped area surrounding the High

<sup>8</sup> "The Golf Club at Moffett Field," Pacific Coast Golf Guide, accessed April 10, 2020, <https://golfguide.net/product/moffett-field-golf-club/>

<sup>9</sup> AECOM, "Historic Property Survey Report for the Airfield at NASA Ames Research Center, Moffett Field, California," 3.4 and 5.6; NASA "Moffett Federal Airfield Construction History and Historical Significance," prepared for the California State Historic Preservation Officer (April 2013):

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Explosive Magazines primarily constructed during World War II and the post-war period, as a standard precautionary measure. However, the location and extent of the Naval Storage Depot is not defined in either report, beyond identifying its relationship with the magazine bunkers, the general qualities of the open landscape, and the historic use of the northeast corner of the airfield prior to the construction of the golf course. In response to the 2013 NASA report, SHPO concurred that the area now referred to as Naval Storage Depot contributes to the expanded historic district, but requested additional information about the character-defining features of the area, particularly the magazines.<sup>10</sup> The ambiguity of the Naval Storage Depot, which is considered an essential part of the High Explosive Magazines' integrity of setting and design, requires further analysis (See **Section 5.2.2.6**).

## 5.2.2.6 Resources Requiring Further Evaluation

Based upon the information available, three resources located within the APE required additional evaluation of eligibility for listing in the NRHP to determine if they are historic properties. These resources include Building 511, the Moffett Field Golf Course, and the LMSD Campus.

In order to be eligible for listing on the NRHP, a resource must be at least 50 years old and retain demonstrable historical significance under at least one of the four established NRHP criteria:

- A. Association with events that have made significant contributions to the broad patterns of history.
- B. Association with the lives of significant persons in our past.
- C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack district.
- D. That have yielded or may be likely to yield, information important in history or prehistory.

Additionally, a property must retain sufficient historic integrity, meaning the various characteristics that allow a property to convey its historical significance. These characteristics include location, design, setting, materials, workmanship, feeling, and association. A property does not necessarily need to retain all aspects of integrity; however, it must retain aspects that are most related to the criteria under which the

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<sup>10</sup> SHPO letter to Keith Venter, "Section 111 Outlease for Hangar One and Moffett Federal Airfield" (June 6, 2013).

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property exhibits significance (i.e. design, materials, and workmanship under Criterion C).

The following provides a summary and evaluation of Building 511 and the Moffett Field Golf Course. More robust documentation, context, and analyses for each resource has been included on California Department of Parks and Recreation (DPR) 523A (Primary Record) and 523B (Building, Structure, Object) forms (See Appendix C DPR 523 Forms). All DPR 523 Forms were prepared by architectural historians Daniel Herrick, MHC, and Rebecca Riggs, MA. The following also provides additional analysis for the Naval Storage Depot, which is considered an associated feature of the contributing High Explosive Magazines, particularly related to its extent and location within the setting of the magazine bunkers.

#### *Building 511*

The resource does not appear to individually exhibit historical significance under any of the criteria that would qualify for NRHP eligibility (See Appendix C Relevant DPR 523 Forms for full evaluation).

The resource is a standard building in terms of Naval design and functionality. While the nationwide P-3 Orion Anti-Submarine Mission, operated in part at MFA from 1962-1994, is identified as having national significance, buildings most associated with this mission include Hangars 1, 2, and 3, where the aircraft were housed, and maintenance occurred. Additional structures that are integrally associated with the mission include the mission administration building (Building 300; demolished) and the Communications Building (Building 656), both of which had essential functions within the P-3 Orion program at MFA. As a weapons assembly and storage facility, Building 511 had a related, support function to the mission, but this is secondary in use and was not integral to the mission. Additionally, weapons assembly facilities are typical to Naval airfields and do not rise to a level of significance in relation to the national significance of the P-3 Orion Mission. As such, it does not have a direct, significant association with the mission and does not rise to a level of significance under Criterion A.

As a typical Navy building, Building 511 does not appear to have any associations with specific individuals significant in history, and does not appear to exhibit significance under Criterion B. In terms of architecture, Building 511 is a simple prefabricated Naval structure, typical of Navy installations throughout the US. It does not appear to exhibit any distinctive typological characteristics, method of construction, nor possess high artistic values. Additionally, it does not represent the work of a master architect, and does not exhibit significance under Criterion C. Similarly, Building 511 is a relatively new and common property type and is unlikely to yield important information related to history or prehistory, and does not appear to exhibit significance under Criterion D.



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Building 511 was constructed outside the period of significance of the expanded NAS Sunnyvale Historic District, which spans from 1930-1961, and does not qualify as a contributing resource.

Therefore, Building 511 is recommended not eligible for listing on the NRHP.

### *Moffett Field Golf Course*

The Moffett Field Golf Course has not been previously evaluated for potential eligibility for listing on the NRHP (See Appendix C DPR 523 Forms for full evaluation).

The evaluation conducted as part of this effort utilized the NRHP significance criteria, as well as the evaluation threshold guidance included in the Department of Defense's 2008 Historic Context Statement on Military Recreational Properties. This document states that in order for a military golf course to be NRHP-eligible, it must have significant associations with:

- Large scale military build-up efforts,
- Direct, significant connections to mission operations or research and development
- Exhibits exceptional golf course design, and/or designed by a master architect.

Per the evaluation, the Moffett Field Golf Course does not appear to be individually eligible for listing on the NRHP under any of the significance criteria. The course was constructed purely as a recreational property for service personnel and support staff at MFA, first as a 9-hole course during the jet operations in 1959, and later expanded to an 18-hole course in the 1960s during the P-3 Anti-Submarine mission. Its construction is not directly related to either mission or other airfield operations, nor is it associated with a large military buildup at MFA. Therefore, the property does not appear to be significant under Criterion A.

The Moffett Field Golf Course does not appear to have any associations with significant individuals, and does not appear to be eligible under Criterion B. In terms of design, the Moffett Field Golf Course was originally designed by noteworthy golf course architect, Bob E. Baldock, and later expanded to its current 18-hole configuration by designer Robert Muir Graves. Both are responsible for designing hundreds of golf courses throughout the United States, including courses at Pebble Beach in Monterey, California. The Moffett Field Golf Course does not appear to rise to a level of significance within either designer's body of work. Additionally, the phased development of the course from 9-hole to 18-hole does not clearly embody the work of either designer, nor does it exhibit a single cohesive design that rises to a level of significance for golf course architecture. Therefore, the Moffett Field Golf Course does not appear to be significant under Criterion C. The property is unlikely to yield any significant

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information related to history or pre-history, and therefore is not eligible under Criterion D.

The Moffett Field Golf Course, although constructed within the period of significance of the expanded NAS Sunnyvale Historic District (1930-1961), was not directly associated with the jet fighter mission. The expanded NAS Sunnyvale Historic District enlarged the area of the historic district to include runways and buildings at MFA associated with airway operations and significant missions. The expanded historic district encompassed the jet fighter mission (1956-1961) under the new period of significance; however, the Moffett Field Golf Course is not directly associated with the significance criteria and therefore does not qualify as a contributor to the expanded NAS Sunnyvale Historic District.

#### *Naval Storage Depot*

The Navy, during World War II, developed the northeast corner of the airfield, which had previously undeveloped farm and marshlands, as the center of the munition magazines and handling operations at MFA. The Navy chose this location because it was undeveloped and had transportation access to the San Francisco Bay via the ferry channel.<sup>11</sup> Several Igloo-type High Explosive Magazines were constructed in a linear arrangement at the eastern portion of the area, whereas the western portion featured a series of fortified ammunition loading circles organized in an arc configuration at the western portion (**Figure 8**). The spatial organization of Naval Storage Depots was dictated by a series of requirements developed by the War Department in the 1920s, which required approximately 450 feet of spacing between magazines, although inter-magazine distances were often dictated by the size of the magazines and the type and quantity of explosives stored therein.<sup>12</sup> However as the designs of magazines changed and became increasingly efficient and safe, distancing requirements between neighboring magazines were decreased.<sup>13</sup> This is reflected in the magazines constructed at MFA, which exhibit an inter-magazine distance of approximately 100 feet.

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<sup>11</sup> NASA, "Moffett Federal Airfield" (2013): 2.

<sup>12</sup> Geo-Marine, Inc. "Army Ammunition and Explosives Storage in the United States: 1775-1945," Special Publications No.7, prepared for the US Army Corps of Engineers Fort Worth District (2000): 50.

<sup>13</sup> Ibid., 54.

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**Figure 8: 1948 Aerial Photograph of the Magazine Area at MFA with large arc-organized magazines on the western portion (left) and smaller, linear-organized magazines on the eastern portion (right); north is up.<sup>14</sup>**

As MFAs operations and mission shifted during the Cold War, the need for an expansive Naval Storage Depot decreased. The large munition loading circles were replaced with smaller facilities along the arc roadway and new uses were introduced primarily through construction of the original 9-hole Moffett Field Golf Course in 1959. As described previously, the introduction of a golf course was an appropriate low-density use that was traditionally reserved for ordnance handling. However, as aerial photographs from this period demonstrate, the area surrounding the magazines continued to be separated from the golf course, which wrapped around the east and north perimeter of the High Explosive Magazines in a way that reflects the inter-magazine distances of approximately 100 feet (**Figure 9**). This distinction of the Naval Storage Depot surrounding the magazines becomes more pronounced over the following decade, particularly after the golf course was expanded to its 18-hole configuration in 1968. The expansion of the golf course saw much of the original munition loading area removed, save for a small portion of structures located at the site of the present-day storage yard (**Figure 10**).

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<sup>14</sup> UCSB Library, Historic Aerial Photograph Collection, "Flight CDF 1948, Frame 5-2-111" (May 5, 1948).

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**Figure 9: 1963 Aerial Photograph of the original 9-hole configuration of the Moffett Field Golf Course at right with the existing magazines at center and the now-demolished munitions loading area at left; north is up.<sup>15</sup>**

<sup>15</sup> UCSB Library, Historic Aerial Photograph Collection, "Flight CAS\_65\_130, Frame 6-76" (May 1, 1965).

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**Figure 10: 1968 Aerial Photograph of the 18-hole configuration of the Moffett Field Golf Course with the loading areas largely removed and the existing magazines remaining with the Naval Storage Depot in place (outlined); north is up.<sup>16</sup>**

While the entirety of the northeast corner at MFA was used for munitions handling during World War II through the early 1950s, the introduction of the golf course and other uses throughout reduced the overall footprint dedicated to the High Explosive Magazines. However, open and undeveloped space surrounding these magazines were retained through the evolution of the Naval Storage Depot. Evidence shows that these areas became increasingly defined as secured areas as development encroached upon the munitions infrastructure. For the remaining High Explosive Magazines, the open spaces of the Naval Storage Depot were largely defined by the late 1950s through the separation of spaces with the golf course. This separation and the interstitial open space of the Naval Storage Depot around the magazines was created through the restriction of personnel and development of a secured perimeter, separating the munitions handling from the various airfield operations and recreational uses that were

<sup>16</sup> UCSB Library, Historic Aerial Photograph Collection, "Flight CAS\_2310 Frame 1-147" (May 2, 1968).

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becoming increasingly common in the area. Therefore, the Naval Storage Depot that exists currently around the High Explosive Magazines, which is demarcated by the perimeter security fencing, is considered the extent of the contributing landscape feature associated with the historic High Explosive Magazines. As such, it is considered a contributing landscape feature to the NRHP-eligible expanded NAS Sunnyvale Historic District for its association with mission operations at the airfield during the period of significance.

### **5.2.3 Stantec Desktop Survey of East Adjacent Parcels Sunnyvale, California (December 2019)**

In December 2019, Stantec architectural historians and archaeologists performed a desktop survey of the area located directly east of MFA in Sunnyvale, California that is included in the APE, which is entirely defined by the Lockheed Martin Missiles & Space Division (LMSD) Campus. This involved visiting the Northwest Information Center (NWIC) to find previous historic evaluations and reports specific to the area. While records for surrounding areas were found for a variety of previous studies, none were specific to the built environment properties located within this specific portion of the APE. Additional research was conducted, which involved examining and reviewing various public records, including Santa Clara County records, City of Sunnyvale planning documents, and Environmental Impact Reports that were prepared for projects in this specific area.

The northwest portion of the Lockheed Martin Missiles & Space campus, located in the eastern periphery of the APE, is a high profile and sensitive technical facility and a full evaluation and survey was not within the scope of this effort nor was access to the campus permitted.

#### **5.2.3.1 Lockheed Martin Missiles & Space Campus, Sunnyvale**

The Lockheed Corporation was originally founded in San Francisco, California, by brothers Allan and Malcom Loughead in 1912, as the Loughead Aircraft Manufacturing Company. The company, having relocated to Burbank, California, became an important aircraft development and manufacturing company and was responsible for major developments in aviation from the 1920s through World War II. At the end of the War, Lockheed was a predominant defense contractor and was responsible for developing some of the most advanced aviation and aerospace programs for the US during the Cold War.

In 1956, the Lockheed company purchased over 400 acres of land in Sunnyvale, California. The location, considered ideal for its proximity to Stanford University and the facilities at NASA ARC, was developed for the Lockheed Missiles & Space Division

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(LMSD). Founded in 1955, the LMSD was contracted by the federal government to develop the US Navy's ballistic missile program, as well the US Air Force's advanced military satellite systems and advanced warning systems. Of the programs developed at LMSD campus, the most famous and well known include the Polaris missile and Hubble Space Telescope programs, as well as the recently declassified CORONA program, which was the first satellite surveillance program developed during the Cold War.<sup>17</sup> To facilitate the advanced research and development and manufacturing activities at Sunnyvale, Lockheed constructed a vast campus of facilities in the area directly east of MFA. The northwest corner of this campus is located within the APE. This portion of the campus features several large facility buildings, as well as a variety of support structures and recreational facilities. The initial buildings appear to have been constructed in 1965 and were subsequently expanded over the following years, reaching its current configuration by the 1980s.

Due to the highly sensitive nature of the facility and the ongoing programs, a full survey and evaluation of the property for potential NRHP eligibility was not conducted. However, given the advanced nature and high-profile research and development that has occurred at the property, this study assumes that the property would likely be eligible for listing in the NRHP per the Advisory Council on Historic Preservation's (ACHP) guidance on applying NRHP criteria on scientific facilities, specifically as a property "associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained."<sup>18</sup> Additionally, while the campus in its current configuration is not yet 50 years of age, the nature of the programs administered at the facilities by LMSD have the potential to be of exceptional significance and could qualify under Criteria Consideration G: Properties that have achieved significance within 50 years. As such, the following analyses of the Undertaking will consider the LMSD campus as a historic property in determining potential adverse effects. Future evaluation of the property should be conducted to fully assess the historical significance and integrity of the campus.

## 5.2.4 Historic Properties in the APE

The following table (**Table 1**) and map (**Figure 11**), outlines the built environment historic properties located within the APE, as well as the year they were constructed, their historic status and history of previous evaluations, whether the property is located

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<sup>17</sup> The History Factory, *Innovation with Purpose: Lockheed Martin's First 100 Years* (Washington DC: Lockheed Martin Company, 2013), 121-123.

<sup>18</sup> Advisory Council on Historic Preservation, *Balancing Historic Preservation Needs with the Operation of Highly Technical or Scientific Facilities* (Washington DC: Advisory Council on Historic Preservation, 1991), 30.

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within the project footprint, and their status as a historic property for the purposes of Section 106 consultation.

**Table 1: Built Environment Properties Within the Undertaking APE & Historic Property Status**

Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
01	Hangar 1	1931-33	<ul style="list-style-type: none"> <li>Individually eligible to NRHP</li> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
02	Gymnasium/ Balloon Hangar	1931-33	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
05	Water Tower	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
10	Heat Plant	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
15	Security Station/ Fire Station and Laundry	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
16	Public Works/ Locomotive Crane Shed	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
17	Administration/ Admirals Building	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
17a	Memorial Anchor	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes
18	Unmanned Aerial Vehicle Research	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	No	Yes



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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
	Building/ Aerological Center				
19	Industry Partners Building/ Bachelor Enlisted Quarters	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
20	Bachelor Officer Quarters	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
21	Garages/ Bachelor Officers Garage	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
22	Garages/ Bachelor Officers Garage	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
23	Carnegie Mellon University/ Dispensary	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
24	Carnegie Mellon University Storage/ Ambulance Garage	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
25	Admin. Building/ Recreation Building	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
26	Gate House	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>

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<b>Bldg. #</b>	<b>Bldg. Name (Current/ Historic)</b>	<b>Year Built</b>	<b>Historic Status</b>	<b>Located in Undertaking Area</b>	<b>Historic Property</b>
32	North Floodlight Tower	1934	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
33	South Floodlight Tower	1934	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
37	Scale House	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
40	Flagpole & Grounds	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
46	Hangar 2	1942	<ul style="list-style-type: none"> <li>Individually eligible to NRHP</li> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
47	Hangar 3	1943	<ul style="list-style-type: none"> <li>Individually eligible to NRHP</li> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
55	Heat Plant	1943	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
69	Inert Ammunition Storage	1943	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> <li>Not individually eligible for the NRHP</li> </ul>	<b>Yes</b>	<b>Yes</b>
70	Fuse & Detonator Magazine	1943	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
			<ul style="list-style-type: none"> <li>Includes the Naval Storage Depot, which is the associated open space around the magazines and located within the boundaries of the existing perimeter security fencing.</li> </ul>		
71, 72, 73, 74	High Explosive Magazines	1943	<ul style="list-style-type: none"> <li>Identified as contributors to the potentially eligible expanded NAS Sunnyvale Historic District</li> <li>Includes the Naval Storage Depot, which is the associated open space around the magazines and located within the boundaries of the existing perimeter security fencing.</li> </ul>	<b>No</b>	<b>Yes</b>
105	Airfield Lighting Vault	1947	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
106	Aircraft Compass Calibration Pad	1947	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
137, 138, 139, 140	Aircraft Fuel Storage Tanks	1952	<ul style="list-style-type: none"> <li>Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; concurred upon by SHPO in June 2016.</li> </ul>	<b>Yes</b>	<b>No</b>
141	Tank Truck Filling Rack	1952	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>Yes</b>	<b>No</b>

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
			<ul style="list-style-type: none"> <li>Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; concurred upon by SHPO in June 2016.</li> </ul>		
143, 147	High Explosive Magazines	1951	<ul style="list-style-type: none"> <li>Identified as contributors to the potentially eligible expanded NAS Sunnyvale Historic District</li> <li>Includes the Naval Storage Depot, which is the associated open space around the magazines and located within the boundaries of the existing perimeter security fencing.</li> </ul>	<b>No</b>	<b>Yes</b>
158	Flight Operations Building & Tower	1954	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
329	Ultra-High Frequency/ Very High Frequency Receiver Building	1958	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
442	Ordnance Handling Pad	1956	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
454	Ultra-High Frequency/ Very High Frequency Transmission Building	19	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
511	Weapons Station	1968	<ul style="list-style-type: none"> <li>Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G.</li> <li>Evaluated and recommended ineligible for the NRHP by Stantec in 2019 in support of the current Undertaking.</li> </ul>	<b>Yes</b>	<b>No</b>
684	Ground Maintenance Storage	1984	<ul style="list-style-type: none"> <li>Not 50 years old, does not meet the age threshold for NRHP eligibility</li> <li>Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G; does not exhibit exceptional significance.</li> </ul>	<b>Yes</b>	<b>No</b>
686	Parachute Repair Building	1984	<ul style="list-style-type: none"> <li>Not 50 years old, does not meet the age threshold for NRHP eligibility</li> <li>Evaluated in Cold War Survey and found ineligible for the NRHP under Criteria Consideration G; does not exhibit exceptional significance.</li> </ul>	<b>Yes</b>	<b>No</b>
934	Moffett Field Golf Course Club House	1959	<ul style="list-style-type: none"> <li>Non-contributor to NAS Sunnyvale Historic District.</li> </ul>	<b>No</b>	<b>No</b>
A1-I1	Housing & Garages	1933	<ul style="list-style-type: none"> <li>NRHP-listed Contributor to NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
MF1000	Runway 32L/ 14R	1938	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible to</li> </ul>	<b>No</b>	<b>Yes</b>

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
			expanded NAS Sunnyvale Historic District		
MF1001	Instrument Runway 14L/ 32R	1945	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District</li> </ul>	<b>No</b>	<b>Yes</b>
MF1002	Aircraft Parking Aprons	1945	<ul style="list-style-type: none"> <li>Identified as contributors to the potentially eligible to expanded NAS Sunnyvale Historic District</li> </ul>	<b>Yes</b>	<b>Yes*</b>
MF1003	High-Speed Aircraft Fueling Pits	1955	<ul style="list-style-type: none"> <li>Identified as a contributor to the potentially eligible to expanded NAS Sunnyvale Historic District</li> <li>Evaluated as ineligible in Section 106 consultation for the Defense Support Fuel Point Closure project; concurred upon by SHPO in June 2016.</li> </ul>	<b>No</b>	<b>No</b>
MF1016	Parallel & Connecting Taxiways	Ca.1946	<ul style="list-style-type: none"> <li>Identified as contributors to the potentially eligible to expanded NAS Sunnyvale Historic District.</li> </ul>	<b>No</b>	<b>Yes</b>
n/a	Moffett Field Golf Course	1959, 1968	<ul style="list-style-type: none"> <li>Evaluated and recommended ineligible for the NRHP by Stantec in 2019 in support of the current Undertaking.</li> </ul>	<b>No</b>	<b>No</b>
n/a	Naval Storage Depot	1943	<ul style="list-style-type: none"> <li>Identified as a contributing landscape feature to the potentially eligible expanded NAS Sunnyvale Historic District</li> <li>Concurred up by SHPO as contributing landscape feature in 2013, but</li> </ul>	<b>No</b>	<b>Yes</b>

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Bldg. #	Bldg. Name (Current/ Historic)	Year Built	Historic Status	Located in Undertaking Area	Historic Property
			additional information requested.		
n/a	Alviso Salt Pond Historic Landscape	Early 20 <sup>th</sup> century	<ul style="list-style-type: none"> <li>Identified as eligible for the NRHP by the USFWS, confirmed by USACE in 2008.</li> </ul>	<b>No</b>	<b>Yes</b>
n/a	LMSD Campus	Ca.1965	<ul style="list-style-type: none"> <li>Unable to evaluate at this time, but being treated as NRHP-eligible for the purposes of this Section 106 consultation</li> </ul>	<b>No</b>	<b>Not Evaluated<sup>+</sup></b>

## Notes:

\* Only portions of the East MF 1002 are located within the identified project footprint, and are associated with the BMF scope of the Undertaking.

+ Assumed eligible for listing in the NRHP.

## 5.2.4.1 Affected Historic Properties

The following section outlines the identified historic properties within the APE that have the potential to be affected by the Undertaking (**Figure 11**). This includes a summary of each historic property, including a brief history and status summary, relevant character-defining features, and relative location to the proposed Undertaking.

Of the identified built environment historic properties, only Building 69 and the eastern portion of East MF1002 are located within the project footprint.

### NAS Sunnyvale Historic District

As outlined in **Section 5.2.1.1**, the original NAS Sunnyvale Historic District was listed on the NRHP in 1994 and determined significant under Criteria A and C for its associations with the development of US Naval aviation prior to World War II, and for its cohesive collection of Spanish Colonial Revival style buildings and the engineering associated with the hangars. In 2013, the expanded NAS Sunnyvale Historic District was identified and determined eligible for listing on the NRHP with an expanded period of significance of 1930-1961, which included the 1950s jet operations of the early Cold War. The expanded district included large swaths of the MFA property that were left out of the original NRHP-listed district, primarily the central airfield and the eastside portion of the

## MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

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airfield, which includes the munitions handling network and the collections of High Explosive Magazines set within the associated open space of the secured Naval Storage Depot at the northeast corner of the property.

All contributing elements of the NAS Sunnyvale Historic District are located within the APE. This includes all of the contributing airfield features – two runways (MF 1000, MF1001), aircraft parking aprons (MF 1002) on the east and west sides of the airfield, various taxiways (MF 1016), and other features (Buildings 106 and 442) – which are primarily defined by their expansive, flat paved surfaces with axial siting and open setting that creates a buffer of open space around each feature. Also included are the supportive airfield operations buildings (Buildings 105, 329, and 454), which are typically simple, prefabricated buildings that house the communication and electrical equipment for the airfield instrumentation, save for the Flight Operations Building & Tower (Building 158), which is a larger two-story building with Mid-Century architectural detailing and prominent control tower.

The entirety of the original Shenandoah Plaza portion on the westside of the airfield is also included in the APE, which is comprised of the original 1930s buildings at MFA.

On the eastside of the airfield, the entirety of the Hangar 2/3 precinct is included within the APE, as are the surrounding areas associated with the munitions handling network, which includes the concrete magazines (Buildings 70-74, 143, 147) set within the center of the Naval Storage Depot, as well as the simple, inert ammunition storage building (Building 69), located north of Hangars 2 and 3.

Of the various identified character-defining features, the following are those that are most relevant within the context of the APE and the Undertaking:<sup>19</sup>

- Flat topography with broad open views across the aviation areas.
- Expansive, linear system of airfield runway features, including the two parallel runways, associated taxiway network, and the compass calibration pad.
- Long views along the airfield towards San Francisco Bay and the salt ponds
- Collection of historic aviation facilities along the perimeter of the airfield. This includes both contributing and non-contributing elements, as the general massing and appearance solidify the spatial organization and character of the airfield.
- Visual dominance of Hangar 1 from throughout the airfield.
- Views to Hangars 2 and 3, which frame the eastside of the airfield and spatially balance Hangar 1 to the west. The three hangars are of primary significance, and

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<sup>19</sup> AECOM, "Historic Property Survey Report," 5.4-5.5.



# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

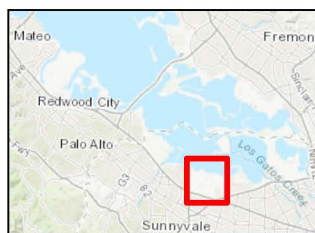
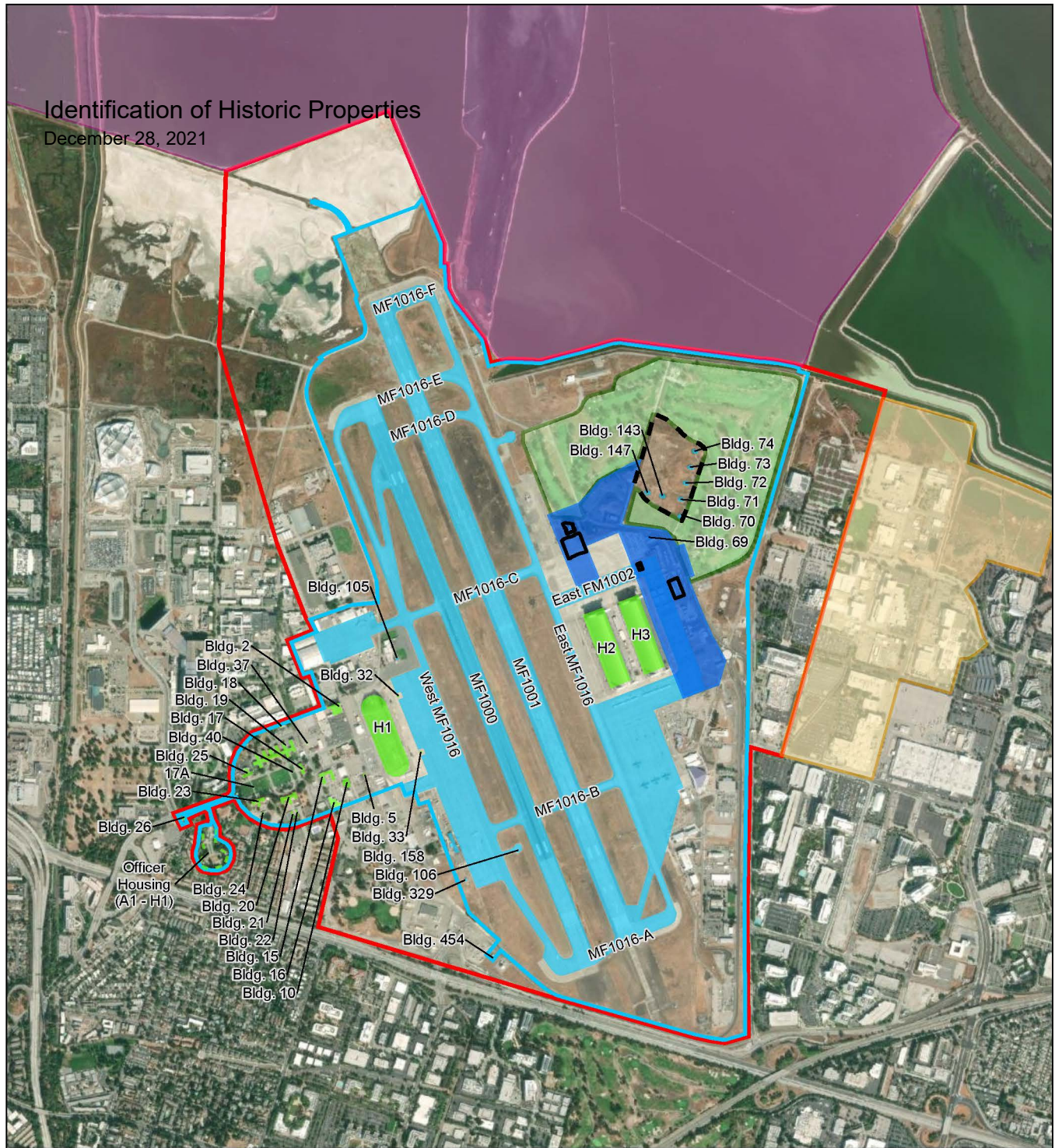
Identification of Historic Properties  
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their massing and appearance support the historic character and integrity of the airfield.

- Ammunition storage and handling features at the northeast corner of the airfield, which include the regularly spaced bunker-like magazines and simple storage facilities, all set within the open space of the Naval Storage Depot.
- Structures associated with aviation lighting, including the two distinct Hangar 1 floodlight towers and simple, utilitarian operations shelters.
- Collective design of buildings and structures and the aesthetics of “futuristic grandeur.”
- Ongoing aviation use.

# Identification of Historic Properties

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## Notes

1. Coordinate System: NAD 1983 StatePlane California III FIPS 0403 Feet
2. Data Sources:
3. Background: Source: Esri, Maxar, GeoEye,

- Undertaking Area / Project Footprint
- Area of Potential Effects (APE)
- Proposed Undertaking Complex Footprint
- Expanded NAS Sunnyvale Historic District Boundary (NRHP Eligible)
- NAS Sunnyvale Historic District Contributing Property (NRHP Listed)
- Expanded NAS Sunnyvale Historic District Contributing Property (NRHP Eligible)
- Naval Storage Depot
- Moffett Field Golf Course
- Alviso Salt Pond Historic Landscape
- Lockheed Missile & Space Campus (Presumed NRHP Eligible for this Section 106 Consultation)

0 1,000 2,000 Feet  
(At original document size of 8.5x11)  
1:24,000



Project Location: Moffett Federal Airfield, Santa Clara County, CA.  
Prepared by KM on 2021-09-26  
TR by RR on 2021-09-27  
IR by ML on 2021-09-27

Project: MFA Eastside Airfield Improvements Project  
Section 106 Technical Report

Figure No.  
11

**Build Environment Historic Properties**

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## *Hangar 1*

Hangar 1 is a large, steel framed dirigible hangar located on the westside of MFA. Constructed between 1932 and 1933, Hangar 1 was designed to house the *USS Macon*, a large dirigible aircraft that operated at MFA until it crashed into the Pacific Ocean in 1935. Over the following decades, it continued to house aircraft and support the various airfield missions. The Streamline Moderne inspired structure continues to be the most prominent and iconic historic structure at MFA (**Photograph 14**).



**Photograph 14: North and east elevations of Hangar 1, looking south.**

The structure has been determined individually eligible for listing on the NRHP for significance associated with Naval history and for its unique engineering and architectural design. In 1994, Hangar 1, as well as the adjacent Moderne style Floodlight Towers (Buildings 32 and 33), was listed on the NRHP as a contributor to the NAS Sunnyvale Historic District.

The most significant character-defining features of the structure include its size and massing, Streamline Moderne style, the “clam shell” doors, the steel exoskeleton structural system, the visual prominence within MFA, and its relationship to the entirety of the sight, particularly to the adjacent Buildings 32 and 33, as well as Hangars 2 and 3, located on the opposite side of the airfield.<sup>20</sup> When it was first identified, the original

<sup>20</sup> Page & Turnbull, Inc. “Hangar One, Moffett Field, California – Re-Use Guidelines,” prepared for NASA/ Ames Research Center (August 24, 2001), 3-4.

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cladding was considered a character-defining feature, but was removed in the late 2000s; however, efforts to rehabilitate the structure are underway.

#### *Hangars 2 & 3 – Buildings 46 & 47*

Hangars 2 and 3 are large, wood framed dirigible hangars located on the eastside of the Airfield. Constructed between 1942 and 1943, Hangars 2 and 3 are nearly identical hangars based upon a standardized plan that was utilized for similar hangars located at a handful of other airfields that were in operation during World War II (**Photograph 15**). Hangar 2, located directly east adjacent to the airfield, was constructed first, whereas Hangar 3 was constructed second. Both were designed to facilitate the LTA coastal defense program at MFA during World War II, and both were used to house fixed wing aircraft that operated out of MFA over the following decades.

In 1988, both hangars were determined individually eligible for listing on the NRHP for significance associated with events during World War II, and for their overall engineering and design. In 1994, Hangars 2 and 3 were each listed on the NRHP as contributors to the NAS Sunnyvale Historic District as excellent examples of military engineering and design during World War II. In 2013, Hangars 2 and 3 were also identified as contributors to the NRHP-eligible expanded NAS Sunnyvale Historic District, which also includes the airfield features at MFA that were significant to the various missions that took place between 1933-1961. Currently, despite its significance as a contributor to the NAS Sunnyvale Historic District, the demolition of Hangar 3 has been recommended because of its structural instability and the unsafe condition posed.

The most significant character-defining features of both hangars include the distinctively large massing; parabolic roof with corrugated aluminum siding; massive sliding hangar doors with supporting concrete towers, wood box beams, and adjoining clamshell roof; the flanking brick masonry sheds; wood frame truss construction set on repeating concrete bents; expansive interior concrete decking; and the vast open interior volumes. Additionally, the two structures are unique for the parallel siting and nearly identical composition, which creates the paired hangars appearance.

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**Photograph 15: North and west elevations of Hangar 2 (right) and Hangar 3 (left).<sup>21</sup>**

## *Building 69*

Building 69 was constructed in 1943 as an inert munition's storage building, located on the northeastern periphery of the airfield (**Photograph 16**). The simple concrete building was used to store inert munitions following the removal of them from aircraft parked on the adjacent parking apron. It was part of the broader munition's operation at the airfield, which included the magazine storage bunkers located to the northeast.

Character-defining features include the simple footprint and concrete construction, gable roof, limited fenestration, symmetrical composition, and concrete loading platform located outside the primary entrance with paired metal doors. The spatial organization with the airfield, particularly with East MF1002 and the High Explosive ammunition magazines is an important element in the building's setting and associations within the broader ammunition handling network. Building 69 is identified as a contributor within

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<sup>21</sup> Photograph accessed from NASA Ames Research Center, Historic Preservation Office, "Hangar 1 – Gallery, Photo #12," accessed May 15, 2020 [https://historicproperties.arc.nasa.gov/hangar1/gallery\\_12.html](https://historicproperties.arc.nasa.gov/hangar1/gallery_12.html).

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the NRHP-eligible expanded boundaries of the NAS Sunnyvale Historic District; it is not individually eligible for the NRHP.



**Photograph 16: North and west elevations of Building 69, looking southeast.**

#### *MF 1002 – Aircraft Parking Apron*

The East MF1002 is an expansive, paved surface located on the eastside of the airfield extending along the East Parallel Taxiway from the CAANG property northwards and surrounding Hangars 2 and 3 (**Photograph 17**). Originally constructed in 1942 as a location for aircraft parking, the Navy expanded East MF1002 to accommodate increased aircraft operations at MFA with the southern apron expanded in the mid-1950s and the northern portion expanded ca.1980.

The West MF 1002 is a similar airfield feature located on the west side of the airfield, directly east adjacent to Hangar 1 and the original Shenandoah Plaza portion of the airfield (Photograph 18). As with East MF 1002, West MF 1002 is an expansive, paved surface that was initially constructed as an aircraft apron in 1942 to facilitate the parking and maintenance of aircraft. The apron was later expanded ca.1950 to its current configuration.

The predominant character-defining feature of East and West MF1002 is the flat, paved surface organized in a repeating, squared grid pattern throughout. At the center of many of these repeating squares are embedded aircraft tie downs. While the entirety of the

## **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

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Parking Apron features this repeating pattern, character-defining spaces are those that were constructed within the 1933-1961 period of significance of the expanded NAS Sunnyvale Historic District. For East MF 1002, this includes the areas directly surrounding the hangars and to the south. The north ca.1980 portion, which is separated from the character-defining space of East MF1002 by an asphalt paved road, is considered non-character-defining because it was constructed outside the period of significance and is therefore not historic.



**Photograph 17: North portion of East MF1002 exhibiting typical conditions; note Hangar 3 north façade at right.**



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**Photograph 18: North portion of West MF1002 exhibiting typical conditions, looking north.**

### *Airfield Features (MF1000, MF1001, MF1016, Building 442)*

The airfield features include the runways, taxiways, and other paved elements that compose the airfield. These are elements that were constructed over various periods, starting as early as 1938 and expanded greatly during World War II and the Cold War-era, specifically the 1950s.

The predominant character-defining features of the airfield features is their flat, paved, and linear nature, as well as their axial orientation and connections that form the broader airfield network. MF1000 and MF1001 as the two runways are the primary features of the airfield, and their parallel axial orientation lend to creating significant view corridors through the NAS Sunnyvale Historic District, particularly the visual connection towards the north and south ends of the airfield. The supporting taxiways of MF1016 are often organized parallel or perpendicular to each other, which facilitate the movement of aircraft leaving and entering the airfield. Collectively, these elements create the vast open space of the airfield, which is center to the district (**Photograph 19**). They all feature broad buffers of open space created by the interstitial sod spaces, as well as the peripheral open space between the surrounding airfield buildings, support structures, and aircraft parking aprons.



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**Photograph 19: Airfield at MFA, looking southwest across the east parallel taxiways and runways.**

Specific to Building 442, which was constructed as the ordnance handling pad in 1956, the airfield features are defined by its lollipop configuration with a circular concrete pad extending perpendicularly east from the east parallel taxiway. It is where munitions were loaded on to aircraft prior to take off and is considered both part of the airfield infrastructures, as well as part of the larger part of the munitions handling network. In addition to its flat, circular, paved nature, the feature is defined by the open space immediately surrounding it that serves as a buffer (**Photograph 20**).

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**Photograph 20: Building 442, looking northeast across the circular ordnance handling pad.**

### *Building 158*

Building 158 is located on the westside of the airfield, south of Hangar 1 and adjacent to West MF 1002, acting as a primary circulation point between the landside portions at MFA with the controlled airfield. It was constructed in 1954 as the Air Traffic Operations and Control Tower Building, and continues to operate in this capacity.

Character-defining features of Building 158 include its siting at MFA between the airfield and landside portions of the property, as well as its parallel orientation with the airfield, irregular rectilinear layout, and one-to-two story height with the integrated control tower. Overall, the building has a Mid-Century Modern aesthetic. It has a primarily flat roof profile with overhanging eaves, stucco veneer, and simple metal fenestration in the form of a large, glazed entrance and repeating windows throughout. The tower features a glazed octagonal control room, which provides uninterrupted views across the airfield.

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**Photograph 21: Primary (west) elevation of Building 158 with Traffic Control tower at center-right.<sup>22</sup>**

## *High Explosive Ammunition Magazines (Buildings 70-74, 143 & 147)*

The High Explosive Ammunition Magazines are a collection of linearly oriented and regularly spaced Igloo type magazine bunkers located at the northeast corner of MFA (**Photograph 22**). Initially, constructed in 1942, Buildings 70-64 were part of the broader ammunition handling network at Moffett Field, which involved transportation from the magazines to the airfield, where they were loaded on to aircraft at East MF1002. Once used, inert ammunition was stored in Building 69, located northeast of East MF1002. In the 1950s, the ammunition network was expanded with the construction of new magazines of Building 143 and 147, as well as Building 442. All of the magazines were purposely arranged and set within open space to create a Naval Storage Depot that is separated from other uses in the vicinity. Around 1968, several munition loading circles located on the west portion of the northeast corner, all of which were arranged in an arc, were removed and the area was developed as part of the Moffett Field Golf Course expansion to its 18-hole configuration.

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<sup>22</sup> Photograph accessed from NASA Ames Research Center, Historic Preservation Office, "Hangar 1 – Gallery, Photo #19," accessed May 15, 2020, [https://historicproperties.arc.nasa.gov/hangar1/gallery\\_19.html](https://historicproperties.arc.nasa.gov/hangar1/gallery_19.html)

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Character-defining features of the Igloo type ammunition magazines include circular layouts with a large metal door leading inside the bunker and an adjacent concrete blast wall. The two elements of are semi-circular, which together create a bisected circular footprint, and are largely covered in rock and earth that create a mound appearance. The linear, regularly spaced arrangement of buildings set within a large open space known as the Naval Storage Depot, which is demarcated by a chain link fence that surrounds the perimeter of the zone and extends 100 feet from the closest magazine. These magazines are identified as contributors within the NRHP-eligible expanded boundaries of the NAS Sunnyvale Historic District.



**Photograph 22: Buildings 73 and 72 with typical High Explosive Magazine design and surrounding open space of the Naval Storage Depot behind the chain link fence, looking southeast.**

### *Naval Storage Depot*

The Naval Storage Depot is defined as the open and undeveloped space surrounding the High Explosive Magazines. Originally, the majority of the northeast area of MFA was used for this purpose; however, following World War II and the Korean War, much of the area was repurposed as the mission at MFA changed, airfield operations expanded, and new uses identified. In 1959, the Moffett Field Golf Course was constructed adjacent to the High Explosive Magazines, and the expansion of the course in 1968 led to the construction of the golf course around the Naval Storage Depot. This neighboring use was considered appropriate as it would retain a limited low-density development of the



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area surrounding the magazines. However, as development continued in the area, the Naval Storage Depot became increasingly defined through the installation of perimeter security fencing, which has continued to define the area around the magazine structures.

The Naval Storage Depot and its undeveloped open space is an associated feature of the contributing High Explosive Magazines and the larger munitions handling network located throughout the northeast corner of the expanded NAS Sunnyvale Historic District. Its character defining features include the low-density quality of the landscape with the magazines located near the center with the established secure perimeter (**Photograph 22**). As such, the Naval Storage Depot is an important part of the design and setting of the expanded NAS Sunnyvale Historic District, but more specifically, the collection of the High Explosive Magazines.

### *Alviso Salt Pond Historic Landscape*

The Alviso Salt Pond Historic Landscape is defined by an extensive network of earthen levees that extends across over 9,000 acres in the south San Francisco Bay. Constructed in the early 20<sup>th</sup> century for the production of salt, the Alviso Salt Ponds were found to be eligible in 2008 for listing on the NRHP as a historic district under Criterion A at the local level for significance associated with the development of the solar salt industry. The extensive salt ponds and levee network continue to be a defining element of the south San Francisco Bay area.

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## Assessment of Effects

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**Photograph 23: Aerial photograph of the eastern portion of the Alviso Salt Ponds, looking southwest with MFA near top right.<sup>23</sup>**

## 6.0 Assessment of Effects

Per 36 CFR 800.5(a)(1) of the NHPA, the Criteria of Adverse Effects are applied to assess potential effects of the Undertaking on historic properties located within the associated APE:

(1) Criteria of adverse effect. An Adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative.

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<sup>23</sup> "Alviso Salt Ponds Aerial," Wikimedia Commons, accessed April 12, 2020, [https://commons.wikimedia.org/wiki/File:Alviso\\_salt\\_ponds\\_aerial.jpg](https://commons.wikimedia.org/wiki/File:Alviso_salt_ponds_aerial.jpg)

# MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT

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. Examples of adverse effects on historic properties, per 36 CFR 800.5(a)(2) include, but are not limited to, the following:

- i) Physical Destruction of or damage to all or part of the property.
- ii) Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.
- iii) Removal of the property from its historic location.
- iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- v) Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.
- vi) Neglect of a property which causes deterioration except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.
- vii) Transfer, lease, or sale of a property out of Federal ownership or control without adequate legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.

The following analysis evaluates each component of the Undertaking for potential effects on historic properties using the above example criteria and Secretary of the Interior's Standards for Rehabilitation in order to fully conceptualize the potential for adverse effects that may result indirectly from the Undertaking. Given the breadth of the proposed Undertaking and its components, a summary of any and all adverse effects is included in **Section 6.7**.

## 6.1 Bus Maintenance Facility

The proposed BMF of the Undertaking involves the maintenance and operations building, bus washing facility, reconfiguration of the bus surface parking facility, and the construction of solar panel array canopies. This portion of the Undertaking is located entirely within the boundaries of the expanded NAS Sunnyvale Historic District and is adjacent to many contributing properties.

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### 6.1.1 Criterion i

*Physical Destruction of or damage to all or part of the property.*

In terms of archaeological resources, there are no known sites located in the project footprint associated with the BMF. Additionally, the majority of this portion of the project footprint overlaps with areas identified as having low archaeological sensitivity, except for a small portion at the northeast corner of the BMF project area, which corresponds with an area identified as having heightened historic-era archaeological sensitivity. While there is some overlap with this sensitivity area, the location has been heavily disturbed and subject to numerous investigations, none of which have uncovered any evidence of archaeological resources. Despite the low likelihood for any archaeological sites to be present in the area associated with the BMF, the potential for any unknown sites to be extant in the project footprint associated with the BMF is recognized. Therefore, it is recommended that a monitor that meets the SOI Qualifications for archaeology be onsite when ground disturbing activities overlap with, or in the vicinity of, identified areas of heightened archaeological sensitivity. Therefore, the BMF scope of the Undertaking would not result in adverse effects to archaeological historic properties under this example.

For built environment resources, the BMF portion of the Undertaking includes a reorganization of the space located at the existing surface bus parking, located directly between Macon and Zook roads and the airfield security fencing to the east. In order to optimize vehicle circulation efficiently and safely throughout the proposed bus parking lot and facility program, Building 69 must be removed from its existing location at the bus parking lot. As a contributing building to the expanded NAS Sunnyvale Historic District with significance under Criterion A for its associations with the missions at the airfield from when it was constructed in 1943 to 1961, relocating Building 69 would result in a significant loss of integrity, particularly through its disrupted spatial organization. Additionally, the feasibility of both physically relocating the concrete munitions structure and finding a historically appropriate receiver site in an area that has multiple environmental constraints is unlikely. As such, demolition of Building 69 is definite, which results in a complete loss of all aspects of integrity and disqualifies Building 69 for being eligible for listing on the NRHP as a contributor to the NAS Sunnyvale Historic District. Therefore, demolition of Building 69 will result in an adverse effect.



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## 6.1.2 Criterion ii

*Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.*

### Rehabilitation Standard 1

*A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships.*

The BMF portion of the Undertaking would not result in changes to the current use of any historic property, including aviation and ongoing operations within the NAS Sunnyvale Historic District. The BMF project area is already being utilized for surface parking, maintenance, and other operations related to the existing bus fleet. Since PV entered the Adaptive Reuse lease in 2014, their operations have maximized the retention of distinctive materials and maintained aviation operations within the historic district. However, while the use is being retained, there are contributors to the NAS Sunnyvale Historic District that will be affected by the proposed expansion and electrification of the existing bus fleet.

First, Building 69 will be removed to allow for the necessary improvements to increase efficiency and safety of the bus circulation through the property. The removal of the building will include the physical removal of a contributing property, as well as disrupting Building 69's spatial relationship within the eastside of MFA, particularly with other elements of the former munitions handling network, which includes the airfield features and the former magazines and Naval Storage Depot.

Second, in order to facilitate the electrification of the bus fleet to meet emission goals, new solar panel array canopies are being constructed throughout the surface parking area, including the portion that overlaps with East MF1002. The canopies will be a notable intervention around East MF1002, which is characterized by its flat, open, and expansive paved surface. While the canopy will be limited to a small portion of the expansive East MF1002, the structures will alter the character of the apron, particularly in the vicinity of Hangars 2 and 3, the setting of which is partially characterized by the open paved surface that surrounds it.

Therefore, due to the removal and demolition of Building 69, which will alter the spatial relationships within the NAS Sunnyvale Historic District, the BMF portion of the Undertaking is not consistent with Rehabilitation Standard 1.

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### Rehabilitation Standard 2

*The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*

#### Maintenance & Operations Building

The proposed Maintenance & Operations Building will not involve the removal of any distinctive materials or alterations of features, spaces, and spatial relationships that characterize the historic property. The building will be sited on a portion of the existing, non-contributing bus surface parking lot at the periphery of East MF1002 and the airfield. The proposed building will be placed east of Hangars 2 and 3. At 45 to 50 feet in height, it will be lower than the hangars by about 121 feet and therefore visually obscured from most of the contributors to the historic district. This placement, coupled with its simple massing, will not visually disrupt the significant view corridors of the expanded NAS Sunnyvale Historic District across and throughout the airfield, nor will it encroach upon the character-defining flat, open topography of the west-adjacent East MF 1002, which also serves as an integral aspect of setting to Hangar 2, Hangar 3, and other historic properties on the eastside of the airfield.

Therefore, the introduction of the Maintenance & Operations building is consistent with Rehabilitation Standard 2.

#### Bus Washing Building

The Bus Washing Building will be a simple, rectilinear building located at the periphery of the eastside portion of the airfield. Similar to the Maintenance & Operations Building, this building will be placed on the non-contributing existing bus parking lot, which will not alter any distinctive features or materials associated with East MF1002, or any other historic properties. This placement is well outside the significant view corridors of the expanded NAS Sunnyvale Historic District, plus its restrained height and simple massing will have no physical disruption on the spatial organization of any historic properties in the vicinity.

Therefore, the Bus Washing Building will adhere to Rehabilitation Standard 2.

#### Bus Parking Lot

The bus surface parking lot is currently being utilized for bus parking, which is not inconsistent with its historic use as aircraft parking. The expansion and reconfiguration of this continued use will be a minor and insignificant departure from the existing conditions. While the expansion of the bus parking associated with this reconfiguration

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will expand on to East MF1002, the property will largely be retained in its existing condition. East MF1002 was originally constructed for the purposes of parking aircraft. While it will be repurposed to serve buses, the slight variation in use will not result in a broad departure that will affect the setting of the property, nor any of the other historic properties within the expanded NAS Sunnyvale Historic District.

The primary alterations associated with this portion will be cosmetic through painting of parking striping and traffic circulation lines. While this will be a new visual element, this will not disrupt the overall character-defining gridded paved quality of the historic property and will be limited to the eastern most area. Subsequently, no other historic property will be indirectly affected by this reconfiguration of the parking spaces.

However, as part of the reconfiguration, Building 69 will be removed from its existing location. The former munition storage building, Building 69 is part of the broader munitions handling network that is situated on the eastside of MFA and is inherently linked to the High Explosive Magazines, Building 442, and East MF1002, all of which are historic properties. By removing Building 69 to accommodate the reconfigured surface parking, this will disrupt the spatial organization of these historic properties and result in diminished historical integrity for the broader munitions network. Therefore, while most of the of the surface parking reconfiguration will not visually disrupt East MF1002 and other properties through the retention of the paved, flat surface, the removal of Building 69 will alter the historical spatial organization and setting that contributes to these properties, thus negatively impacting the other elements of the munitions network, including Buildings 70-74, 143 and 147, and the ordnance handling pad (Building 442).

Therefore, as the removal and demolition of Building 69 will alter the historical spatial organization and setting that characterize the NAS Sunnyvale Historic District, the bus parking lot portion of the Undertaking is inconsistent with Rehabilitation Standard 2.

### Solar Panel Array Canopies & Bus Charging

The proposed solar panel array canopies are proposed to extend over most of the proposed bus surface parking, including the portions that will extend into the eastern portion of East MF1002. The introduction of these large canopy systems, which will be constructed to an approximate height of 18', will disrupt the flat, expansive nature of East MF1002 at this location, resulting in diminished integrity of design, setting, feeling, and association. Additionally, the character-defining flat and open nature of East MF1002 is an integral element to the spatial organization of the Eastside Airfield, particularly in the setting of Hangar 2, Hangar 3, and the contributing properties included in the ammunition handling network, such as the magazines and ordnance handling pad. The introduction of the solar panel array canopies will visually disrupt the

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spatial organization of these elements also, resulting in diminished integrity of design, setting, feeling, and association.

Therefore, the Solar Panel Canopies & Bus Charging does not adhere to Rehabilitation Standard 2.

### **Rehabilitation Standard 3**

*Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.*

The BMF portion of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the project will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the BMF portion of the Undertaking will adhere to Rehabilitation Standard 3.

### **Rehabilitation Standard 4**

*Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

The BMF portion of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the BMF, and immediate surroundings, have been extensively studied, including recent evaluations of the former fueling infrastructure, Golf Course, and Building 934, none of which qualify as historic properties. Therefore, the BMF portion of the Undertaking will adhere to Rehabilitation Standard 4.

### **Rehabilitation Standard 5**

*Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

As described previously, the BMF portion is predominantly centered on the existing paved surface lot, located northeast of East MF1002 and south of Building 69. This is where the maintenance and operations and bus washing buildings will be located; the construction of these buildings will not directly alter the historic paved surface associated with the property. The largest scope component at East MF1002 involves the utilization of the existing paved surface for expanded bus parking. Alterations associated with this involve the painting of parking and circulation striping, which will not physically alter the gridded paved surface that defines East MF1002. However, the

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scope does call for the physical removal of Building 69, which would result in the loss of all distinctive features and finishes of this structure.

The existing bus shelters, specifically designed as temporary, will be removed without damaging the existing paved surface of the apron, and their removal will not directly alter East MF1002. The BMF portion also includes installation of the solar panel canopy arrays, which will be supported by regularly spaced metal posts installed at locations across the entirety of the bus parking lot, as well as the installation of approximately 300 electric vehicle charging stations for the future bus fleet. While these elements will be installed over a large area at the eastside of the airfield, this work does include the easternmost portions of East MF1002 (see Appendix A, Figure C1.1). While this portion of the East MF1002 will undergo extensive alterations, large portions of the feature to the south, north, and west will remain in their existing condition and continue to contribute to the broader NAS Sunnyvale Historic District. The amount of disturbance required to construct these elements is still being determined as part of the design process, but it will likely result in some damage to the character-defining pavement of East MF1002 by removing pieces of it and drilling supporting infrastructure for the BMF into it.

Therefore, due to the removal/loss of distinctive finishes of Building 69 and East MF1002, the BMF portion of the Undertaking will not adhere to Rehabilitation Standard 5.

## Rehabilitation Standard 6

*Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.*

The BMF portion of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

## Rehabilitation Standard 7

*Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

The BMF portion of the Undertaking will not include the cleaning of any historic properties. The Undertaking proposes no chemical or physical treatments to historic materials. Therefore, the BMF will adhere to Rehabilitation Standard 7.

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### Rehabilitation Standard 8

*Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*

As described previously, there are no known archaeological resources in the direct APE associated with the BMF portion of the Undertaking. The majority of the BMF is located in an area identified as having low archaeological sensitivity, except for a portion of the northeast area of the project area, which is identified as having heightened historic-era archaeological sensitivity. Although this area is extensively disturbed and previously surveyed with no evidence of cultural materials or sites, it is acknowledged that potential materials may be extant and an SOI qualified archaeologist will be present during construction activities in the areas that overlap with, and are adjacent to, the identified area of archaeological sensitivity. If any materials are discovered during construction, all work will cease and the NASA ARC Inadvertent Discovery Policy, Standard Operating Procedure 8 in the ICRMP, will be followed. Therefore, the BMF portion of the Undertaking will adhere to Rehabilitation Standard 8.

### Rehabilitation Standard 9

*New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.*

#### Maintenance & Operations Building

The design of the Maintenance and Operations Building, while still under development, will be both differentiated and compatible within the context of the NAS Sunnyvale Historic District. First, the proposed building will be contemporary in design and construction and will not create a false sense of history and historical development in the setting of the district. At the same time, the simple and utilitarian composition of the building's design will reflect upon several character-defining features found consistently throughout the historic district. The proposed building will also feature a simple rectangular plan, massing, and composition that reflects upon these structures and other historic properties found throughout the historic district. Second, the building will have a relatively restrained height, which will not visually detract from the monumental prominence of Hangars 1, 2, and 3 within the setting of the historic district. The Maintenance & Operations Building will be oriented parallel to Hangars 2 and 3, which

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will be consistent with the existing spatial organization of these structures, as well as the contributing airfield infrastructure, such as runways and taxiways.

In terms of materials, the maintenance and operations building will likely feature an industrial material palette of concrete and metal panels. This is directly reflecting construction materials of nearby Hangars 2 and 3, as well as other historic properties within the APE, which feature various industrial materials as cladding, including corrugated sheet metal, insulated panels, and concrete.

Overall, the preliminary design of the Maintenance & Operations Building appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.2** will guide the design team to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, the Maintenance & Operations Building will adhere to Rehabilitation Standard 9.

### Bus Washing Building

The design of the simple, single-story building will be both differentiated and compatible within the setting of the expanded NAS Sunnyvale Historic District. The building will be contemporary and will not create a false sense of history, while also exhibiting a utilitarian aesthetic, which is consistent throughout MFA. The building will reflect common elements of the district, including a simple rectilinear massing and layout, as well as an industrial material palette of concrete with metal fenestration. The building will also be short in height, particularly in relation to the monumental hangars, which are the most prominent contributors within the district. The bus washing building will be sited parallel to the hangars, thus be consistent with organization of the primary airfield features, and will feature an open pass through at the north and south elevations, which is similar to the openings at both Hangar 2 and 3.

Overall, the preliminary design of the Bus Washing Building appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach outlined in **Section 2.2** will guide the design team to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, the Bus Washing Building will adhere to Rehabilitation Standard 9.

### Bus Parking Lot

As described above, the majority of the bus parking lot improvements will occur at noncontributing areas of the existing parking lot, although some improvements will

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extend over the character-defining paved surface of East MF1002. However, these alterations will be minor, with the repainting of parking and traffic circulation lines, leaving the materials in their existing condition. These alterations, which will clearly cater to bus traffic, will be a clearly contemporary and will not create a false sense of history, while retaining the historic character of East MF1002 and its associations with aircraft parking and maintenance.

However, the reconfiguration of the Bus Parking Lot will require the removal of the contributing Building 69, which will in turn alter the significant spatial relationships of the surrounding historic properties on the Eastside of the airfield.

Therefore, the Bus Parking Lot does not adhere to Rehabilitation Standard 9.

#### **Solar Panel Array Canopies & Bus Charging**

The proposed solar panel array canopies and bus charging portion involves the installation of multiple arrays of solar panel canopies over the bus parking lot. These elements will clearly be contemporary additions to the property, which will not create a false sense of historical development at MFA. At the same time, they will exhibit a utilitarian and technological aesthetic that will be consistent with the established vocabulary of the expanded NAS Sunnyvale Historic District and its contributors. Despite this balance of compatibility and differentiation, the placement of the solar panel canopies on East MF1002 will disrupt the character-defining flat and expansive paved surface of the property. This will diminish the historic character and integrity of East MF1002, and alter its spatial relationship with Hangar 2, Hangar 3, and the ammunition handling network.

Therefore, the solar panel array canopies and bus charging portion does not adhere to Rehabilitation Standard 9.

### **Rehabilitation Standard 10**

*New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired*

#### **Maintenance & Operations Building**

The Maintenance & Operations Building will be constructed on the non-contributing asphalt bus parking lot at the eastern side of MFA. If removed in the future, there will be no impairment to the essential forms and integrity of any historic property. Therefore, the Maintenance & Operations Building will adhere to Rehabilitation Standard 10.



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## Bus Washing Building

The Bus Washing building will be constructed on the non-contributing asphalt bus parking lot at the eastern side of MFA. If removed in the future, there will be no impairment to the essential forms and integrity of any historic property. Therefore, the Bus Washing Building will adhere to Rehabilitation Standard 10.

## Bus Parking Lot

At the portions of the proposed bus parking lot improvements that extend onto East MF1002, the parking and traffic circulation lines could easily be removed from the historic painting, reverting it to its existing condition leaving the character-defining pavement with its essential form and integrity. However, the removal of Building 69 to accommodate the reconfiguration of the bus parking lot is non-reversible and, therefore, does not adhere to Rehabilitation Standard 10.

## Solar Panel Array Canopies & Bus Charging

Of the BMF portion components, the solar panel array canopies and bus charging scope are the most significant visual alterations to the historic district due to their sheer size and the amount of space they will encompass. While some of the canopy arrays and charging stations will be constructed on non-contributing areas of asphalt, some will be constructed on the character-defining gridded paved surface of East MF1002, which will both alter the materials and finishes of the property, as well as the significant spatial relationship between it and other historic properties in the vicinity, namely Hangar 2, Hangar 3, and the various contributors of the ammunition handling network. While the removal of these canopies and bus charging stations would restore the significant spatial relationships between East MF1002 and these other historic properties, repairs to the paved apron would be required. However, these repairs could be in-kind to restore East MF1002 to reflect its existing condition.

Therefore, the solar panel array canopies and bus charging portion will adhere to Rehabilitation Standard 10.

## **6.1.3 Criterion iii**

### *Removal of the property from its historic location.*

As described above, the BMF portion of the Undertaking, specifically the necessary reconfiguration of the bus surface parking lot, will result in the removal of Building 69. The removal of Building 69, which is eligible for listing on the NRHP as a contributor to

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the NAS Sunnyvale Historic District, would result in an adverse effect under this example.

#### 6.1.4 Criterion iv

*Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.*

As described in the analysis above, many of the features associated with the BMF portion of the Undertaking, specifically the Maintenance & Operations and Bus Washing buildings, will be of similar historic use at the eastside portion of the airfield through the parking and maintenance of vehicles, albeit buses rather than aircraft. While these scope elements will not alter any physical features or broader character of the expanded NAS Sunnyvale Historic District or its contributors, the proposed reconfiguration of the bus parking lot requires the removal of the contributing Building 69. This will result in alterations on this historic property itself, as well as the integrity of associated historic properties at the eastside of the airfield, namely the High Explosive Magazines and other elements of the munitions handling network. The solar panel array canopies and bus charging scope program will alter the character-defining expansive, open paved surface of East MF1002, diminishing the property's historic integrity. In turn, the diminished character of East MF1002 will disrupt the spatial relationships and integrity of design and setting for many of the surrounding historic properties, including Hangar 2, Hangar 3, and the High Explosive Magazines, and other historic properties; however, the project overall has been kept to this relatively small area on the eastside of MFA to reduce impacts on the airfield and the NAS Sunnyvale Historic District.

Therefore, the bus parking lot and the solar panel array canopies and bus charging portion will cause an adverse effect to East MF1002, Hangar 2, Hangar 3, and the High Explosive Magazines.

#### 6.1.5 Criterion v

*Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's historic features.*

Upon completion of the Undertaking, audible and atmospheric conditions will be comparable to those currently existing and those that likely existed during the period of significance. It was and is an active air base with its associated significant noise levels and aircraft fuel combustion. .

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As demonstrated above, the placement and preliminary designs of the Maintenance & Operations and Bus Washing buildings will not visually diminish the integrity of the adjacent historic property's historic features, specifically the character-defining open, expansive paved surface of East MF1002, or the monumentality of Hangars 2 and 3 within the setting of the expanded NAS Sunnyvale Historic District.

The bus parking lot reconfiguration is primarily defined by the painting of parking and traffic circulation striping at East MF1002, which will not visually detract from, nor diminish the integrity of, the historic property's character-defining open paved surface. However, the removal of Building 69 as part of the reconfiguration will diminish its integrity, as well as the integrity of design and setting for other historic properties, as discussed throughout this analysis.

Similarly, the solar panel array canopies and bus charging will visually disrupt the character-defining open, paved surface of East MF1002, resulting in diminished integrity of design, setting, materials, workmanship, and feeling. In turn, the alterations to East MF1002 from the canopies will disrupt the spatial relationship between portions of the apron with many of the other historic properties at the eastside of the airfield, particularly Hangars 2 and 3, diminishing the integrity of setting and design.

Therefore, the bus parking lot and the solar panel array canopies and bus charging portion will cause an adverse effect to East MF1002, Hangar 2, and Hangar 3.

## 6.1.6 Criterion vi

*Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe or Native Hawaiian Organization*

The BMF portion of the Undertaking would not involve the neglect of a property that causes its deterioration and, therefore, would not cause an adverse effect to historic properties under this example.

## 6.1.7 Criterion vii

*Transfer, lease, or sale of a property out of Federal ownership or control without adequate legally enforceable restriction or conditions to ensure long-term preservation of the property's significance.*

The BMF portion of the Undertaking would not involve the transfer, lease, or sale of a property out of Federal ownership or control and, therefore, would not cause an adverse effect to historic properties under this example.

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## 6.2 Private Hangar

The proposed private hangar portion of the Undertaking includes the construction of one new hangar along the northeastern periphery of the airfield and associated site upgrades, including the replacement of the existing concrete aircraft apron and the addition of associated automobile surface parking alongside Zook Road. The private hangar is located entirely within the boundaries of the expanded NAS Sunnyvale Historic District.

### 6.2.1 Criterion i

*Physical destruction of or damage to all or part of the property.*

The private hangar portion of the Undertaking will not result in any physical destruction or damage to all or part of a historic property. For archaeological resources, the entirety of this project area is located in areas of low archaeological sensitivity. There are no known sites and survey efforts did not reveal any evidence of extant cultural materials. However, it is acknowledged that potential materials may be extant, and that if discovered during construction, all work will cease and the NASA ARC Inadvertent Discovery Policy, Standard Operation Procedure 8 in the ICRMP, will be followed. As for the built environment, all physical work is limited to the non-contributing areas of the NAS Sunnyvale Historic District. No historic properties are located in the project area. While Building 684 will be demolished and Building 686 will be repurposed for the private hangar operations and maintenance, none of these contribute to the historic district, nor are they individually historic properties. Therefore, the private hangar will not cause an adverse effect under this example.

### 6.2.2 Criterion ii

*Alteration of a property including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped accesses that is not consistent with the Secretary's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines.*

#### Rehabilitation Standard 1

*A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships*

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The private hangar portion of the Undertaking will not alter the use of any historic property within the APE, particularly the NAS Sunnyvale Historic District and its contributors. The proposed hangar will perpetuate the historic and existing aviation use within the NAS Sunnyvale Historic District. While Building 684 will be demolished to allow for the construction of the private hangar, it is not a contributor to the district, nor is it historic in its own right. While the project area for the private hangar is largely open and appears undeveloped, due to the decommissioned MF1003, the placement of the hangar in this location will not disrupt any significant spaces or spatial organization within the NAS Sunnyvale Historic District. The hangar will be placed along the periphery of the airfield, which perpetuates the established pattern of development of supporting airfield infrastructure and buildings setback from the airfield, particularly the runways and connecting taxiways, preserving the openness of the airfield and not infringing upon any significant view corridors across the airfield, or in line with the runways towards San Francisco Bay. The building will also be comparably short in relation to other structures at MFA, notably Hangar 1, 2, and 3, and will not visually compete with the monumental presence of these structures (see Appendix B for Massing Simulations).

Therefore, the private hangar portion of the Undertaking adheres to Rehabilitation Standard 1.

## Rehabilitation Standard 2

*The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.*

The proposed private hangar is sited on an area with no historic properties and will not involve the alteration of any distinctive materials or features that characterize a historic property. In terms of spatial relationship, the construction of the private hangar along the periphery of the airfield runway and taxiway network will be on the edges of the aviation areas around the central portion of MFA. According to the 2013 HPSR, the placement of both historic and contemporary hangars along the edges of the airfield supports “the historic spatial character and texture of the Airfield Landscape.”<sup>24</sup> The addition of the private hangar to the airfield is consistent with the property’s historic use. While the addition of the hangar will alter some viewsheds from the northeast corner of MFA towards Hangar 1, particularly from portions of the Moffett Field Golf Course and Naval Storage Depot, these are not considered to be significant view corridors of the district, as identified in the HPSR. Upon further analysis, the visual connections between the Naval Storage Depot and Hangar 1 are not significant in the context of the broader NAS

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<sup>24</sup> AECOM, *Historic Property Survey Report*, 5-6

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Sunnyvale Historic District. However, the spatial connection between the Naval Storage Depot and the other elements of the munitions handling network, such as the East MF1002 and Building 69, are significant and unaltered by the siting of the private hangar. As such, the placement of the private hangar does not alter the spatial relationships of the airfield and its historic properties.

Therefore, the private hangar adheres to Rehabilitation Standard 2.

### **Rehabilitation Standard 3**

*Each property shall be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, will not be undertaken.*

The private hangar portion of the Undertaking will not create a false sense of historical development through the addition of conjectural features or other historical materials. All elements proposed as part of the scope will be clearly contemporary and differentiated from the contributing elements of the NAS Sunnyvale Historic District. Therefore, the private hangar portion of the Undertaking will adhere to Rehabilitation Standard 3.

### **Rehabilitation Standard 4**

*Changes to a property that have acquired historic significance in their own right will be retained and preserved.*

The private hangar portion of the Undertaking will not affect any portion of a property that has acquired significance in their own right. The project area associated with the hangar and immediate surroundings have been extensively studied, including recent evaluations of MF1003, the Golf Course, and Buildings 511, 684, and 686, none of which qualify as historic properties. Therefore, the private hangar portion of the Undertaking will adhere to Rehabilitation Standard 4.

### **Rehabilitation Standard 5**

*Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.*

As described previously, the private hangar will not physically alter the character-defining features of any historic property, including contributing elements within the NAS Sunnyvale Historic District. As part of the scope, Building 684 will be demolished and Building 686 will be repurposed as the operations and maintenance building for the private hangar, none of which are contributors to the NAS Sunnyvale Historic District, nor are they individual historic properties. The private hangar includes the

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reconstruction of the existing concrete aircraft parking apron, which will abut and connect the eastern parallel taxiway. However, the new apron will not physically disrupt the paved surface of the taxiway and will be clearly distinguished as new construction, leaving the historic design of the runway network in place.

Therefore, the introduction of the private hangar and apron adheres to Rehabilitation Standard 5.

## Rehabilitation Standard 6

*Deteriorated historic features will be repaired rather than replaced. Where the severity of the deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.*

The private hangar portion of the Undertaking does not involve the treatment of any deteriorated features belonging to a historic property and, therefore, will adhere to Rehabilitation Standard 6.

## Rehabilitation Standard 7

*Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.*

The private hangar portion of the Undertaking will not result in the cleaning of any historic properties. As such, no chemical or physical treatments to historic materials will be used in the context of this standard. Therefore, the private hangar will adhere to Rehabilitation Standard 7.

## Rehabilitation Standard 8

*Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.*

As described previously, there are no known archaeological resources in the project footprint associated with the private hangar portion of the Undertaking. The private hangar is located entirely within an area identified as having low archaeological sensitivity with no known archaeological sites. Additional pedestrian surveys of the area did not uncover any cultural materials or evidence. However, there is the noted potential for archaeological sites to be present. In the event that a discovery of archaeological materials, all work will be stopped and the proper inadvertent discovery protocols,

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outlined in ICRMP Standard Operating Procedure 8, will be followed. Therefore, the private hangar portion of the Undertaking will adhere to Rehabilitation Standard 8.

### **Rehabilitation Standard 9**

*New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the historic integrity of the property and its environment.*

The design of the hangar, while still being developed, will be both differentiated and compatible within the context of the expanded NAS Sunnyvale Historic District. First, the proposed private hangar will be clearly contemporary in design and construction and will not create a false sense of history and historical development in the setting of the district. Simultaneously, the simple utilitarian design of the proposed hangar will be consistent with several character-defining elements found within the historic district. As noted, the proposed private hangar is consistent within the setting of the airfield; the height will be about 74.5 feet and therefore not compete with the prominence of Hangars 1, 2, and 3 within the landscape of MFA. The simple massing and architectural articulation of the private hangar is consistent with the historic MFA with its restrained and utilitarian architectural vocabulary of the former Naval buildings and structures. Although the simple, box-like massing is reflective of several historic properties found throughout the district – Hangars 1, 2, and 3; Buildings 69, 105, and 158 – the massing of the private hangar is on a much smaller scale than that of the existing facilities at MFA. This will reduce the visual bulkiness of the private hangar, especially in relation to Hangars 2 and 3, while also creating a sense of symmetry that is also exhibited throughout the district. By having the private hangar paired with Building 686, this directly reflects the site orientation and spatial organization of Hangars 2 and 3 as paired structures with support facilities, including Building 55, set at the center. The setback of the private hangar from the East Parallel Taxiway will also retain the historic character, strong linear qualities, and overall functionality of the taxiway as part of the broader airfield.

In terms of materials, the private hangar will be a framed structure predominantly clad in insulated metal panels. This is consistent with the materials used for Hangars 2 and 3, as well as other historic properties within the APE, which feature various industrial materials as cladding, including corrugated sheet metal, insulated panels, and concrete.

Overall, the preliminary design of the private hangar appears to adhere to Rehabilitation Standard 9. Where there are currently unknowns about the design, the design approach



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outlined in **Section 2.2** and design review process outlined in **Section 7.1** provides conditions that the design team must adhere to in order to create a design that is both compatible and differentiated from the NAS Sunnyvale Historic District and its contributors. Therefore, if these conditions are met, the private hangar will adhere to Rehabilitation Standard 9.

## Rehabilitation Standard 10

*New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired*

The private hangar could be removed without diminishing the integrity of a historic property. As described above, the private hangar is being constructed on a portion of the airfield with no historic properties. The future removal of these elements at a future date would revert the site to a state that is consistent with the existing conditions. Therefore, the private hangar will adhere to Rehabilitation Standard 10.

### 6.2.3 Criterion iii

*Removal of the property from its historic location.*

The private hangar will not result in the removal of any historic property from its location. As part of this portion of the Undertaking, Building 684 will be demolished and Building 686 will be adaptively reused, neither of which are considered historic properties. Therefore, the private hangar portion of the Undertaking will not result in an adverse effect under this example.

### 6.2.4 Criterion iv

*Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.*

In terms of use and spatial organization, the historic district's significance is associated with aviation operations and military missions that occurred at the property between 1930 and 1961. As such, the introduction of the hangar will not introduce a new use to the airfield that will result in significant alterations. The private hangar will perpetuate the existing and historic use as a working airfield, which is consistent with the overall character of the district and its setting.

Therefore, the private hangar will not result in an adverse effect under this example.

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#### 6.2.5 Criterion v

*Introduction of visual atmospheric, or audible elements that diminish the integrity of the property's historic features.*

While increased aircraft to this area of the airfield will result in increased noise following the completion of the hangar, this will be consistent with the conditions of MFA as a working airfield and the setting of the expanded NAS Sunnyvale Historic District and its contributors.

As for potential visual impacts, the proposed hangar will be located at the northeast periphery of the airfield, well outside the significant view corridors within the expanded NAS Sunnyvale Historic District, which, per the HPSR, include across the airfield between Hangars 1 to the west and Hangars 2 and 3 to the east, parallel with the airfield runways towards San Francisco Bay, and views from the air traffic control tower of Building 158 throughout the airfield. Other character-defining visual aspects of the historic district include the prominence and distinction of the monumental Hangars 1, 2, and 3 within the setting of the district. This visual prominence is enhanced further by the flat and expansive nature of the site, specifically in contrast to the adjacent aircraft parking aprons, runways, and taxiways. While the proposed private hangar is a large structure, it is relatively small in comparison to Hangars 1, 2, and 3 (see Appendix A, Figure C1.1). This comparatively reduced height, coupled with the proposed location at the northeast corner of the airfield will further reduce any visual intrusion within the setting of the historic hangars, or within the broader historic district. Specific to visual connections to Hangar 1, while the new hangar may block view corridors from select locations within Moffett Field Golf Course and, perhaps, the Naval Storage Depot, these views are not considered significant. Rather the visual connection between the Naval Storage Depot and East MF1002 are more significant in establishing the spatial organization of the munitions handling network; these views will not be blocked by the siting of the private hangar.

Therefore, the new private hangar will not result in an adverse effect under this example.

#### 6.2.6 Criterion vi

*Neglect of a property which causes deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization.*

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The construction of the private hangar will not result in the neglect of a historic property that will result in deterioration. The construction of the hangar will perpetuate the existing and historic use of the airfield, requiring sufficient upkeep of many of the existing contributors to the NAS Sunnyvale Historic District. Similarly, the addition of the hangar is intended to increase airfield capacity and not transfer use from a historic property, thus not resulting in the vacancy of a historic property that may result in deterioration. Therefore, the private hangar will not cause an adverse effect under this example.

### **6.2.7 Criterion vii**

*Transfer, lease, or sale of a property out of Federal ownership or control without adequately legally enforceable restrictions or conditions to ensure long-term preservation of the property's significance.*

The private hangar and the associated facilities will not involve the transfer, lease, or sale of any portion of the expanded NAS Sunnyvale Historic District, its contributors, or any other historic property out of Federal ownership or control. Therefore, the Undertaking will not cause an adverse effect to historic properties under this example.

## **6.3 Cumulative Effects to the NAS Sunnyvale Historic District**

The proposed Undertaking involves the construction of several new facilities and site improvements located at the eastside of the airfield; the Undertaking is located entirely within the boundaries of the NAS Sunnyvale Historic District. In terms of physical effects to the historic district, the majority of the facilities involved in the Undertaking will not result in alterations to any of the contributing properties within the District. However, certain aspects of the Undertaking, such as the BMF, will involve alterations to contributing properties, including demolition of Building 69. In addition to the proposed Undertaking, a separate project is being proposed to demolish Hangar 3, due to its structural instability and the unsafe condition posed.

In evaluating the cumulative effects to the historic district, it bears emphasizing that the effects from the projects at MFA would be concentrated in the eastern portion of the

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historic district. In turn, there are fewer contributors to the historic district located in the eastern portion of the district, as compared to the western portion of the district. Most of the significant buildings and structures are located on the western portion of the district, which encompasses the original NAS Sunnyvale Historic District that is listed on the NRHP, including Hangar 1 and Shenandoah Plaza and all its surrounding buildings.

Within the district, there are 12 contributors that will be adversely affected by the Undertaking, including Hangars 2 and 3, Building 69, Buildings 70-74 (high explosive magazines), 143-147 (high explosive magazines), MF1002 (aircraft parking apron), and the Naval Storage Depot. Nine of the contributors (Hangar 2, Buildings 70-74, Buildings 143-147, and the Naval Storage Depot) would retain their integrity, except for their setting, which would be diminished, but each of these contributors would continue to retain its significance as a contributor to the historic district.

The Undertaking would involve the demolition of Building 69. This is a small property and contributor of lesser significance to the district, especially in comparison to the airfield infrastructure and monumental hangar structures. However, Building 69 is still an integral component to the munitions handling network in the northeast corner of the airfield. While the loss of Building 69 would diminish some aspects of integrity to the district, overall most of the contributors would be retained in their existing condition with only minimally reduced aspects of integrity of setting, design, and association to those contributors associated with the munitions handling network.

The Undertaking also includes the installation of the solar panel canopy array, which would be installed across a portion of the existing bus surface parking lot, including the easternmost portions of East MF1002. Much of the apron would be left in its existing condition, but the installation of the canopies would detract from the flat, expansive paved nature of the apron. The canopies will physically alter a portion of the contributing apron and its character-defining features, as well as the spatial relationship between the airfield and the eastern contributors; however, the canopies will be obstructed from view by the hangars from most significant vantage points, such as Hangar 1.

As noted above, a separate project proposes demolition of Hangar 3. While Hangar 3 is a significant contributing resource to the historic district, Hangar 2 is virtually identical in scale and materials and will not be removed. In addition, Hangar 2 blocks the view of Hangar 3 from much of the western side of the historic district, reducing the effects of removing Hangar 3. Thus, the proposed demolition of Hangar 3 will not alter the potential effects of the Undertaking on significant view corridors, as Hangar 2 will still be in place to separate the new facilities on the eastern periphery of the district from the contributing district elements that are located in the center and along the western periphery of the district.

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Overall, while the cumulative effects of the Undertaking and the proposed demolition of Hangar 3 will result in an adverse effect by reducing the integrity of contributors to the NAS Sunnyvale Historic District on the Eastside Airfield, the historic district will still retain enough of its essential physical features to convey its significance.

Other alterations associated with the Undertaking include the construction of the new private hangar and the demolition of Building 684. Building 684 is not individually eligible or a contributor to the NAS Sunnyvale Historic District, therefore while altering the existing physical components within the historic district, it will not reduce the overall integrity of the contributors in the northeast corner of the airfield. The addition of the private hangar to the Eastside Airfield would diminish some aspects of setting for contributors like Hangar 2 and Hangar 3, but overall, their existing conditions would be maintained with minimally reduced integrity.

In terms of visual effects, the preliminary siting, design, and design conditions of the proposed facilities (outlined in **Section 2.2**) will move to create facilities that are both compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District. As outlined in the previous sections and the analysis of each facility in relation to the relevant contributors of the district, siting of the facilities takes into consideration placement of the buildings and structures in relation to significant features of the district. All major facilities are sited in a way that will not physically affect contributing elements to the district, while also being set back from flat and expansive airfield features to respect the open visual characteristics, spatial organizations, and buffers associated with significant spaces. Additionally, the placement of all facilities, primarily towards the eastern periphery of the district, respects the more centrally located contributing elements of the airfield. This also leaves the significant view corridors – between Hangars 1 and Hangars 2/3, views across the airfield towards San Francisco Bay and the control tower at Building 158 – in their existing condition. With the proposed demolition of Hangar 3, the existing significant view corridor between Hangar 1 and Hangar 2 will remain intact, as will the views across the airfield towards San Francisco Bay. As noted above, the proposed demolition of Hangar 3 will not alter the potential effects of the Undertaking on significant view corridors, as Hangar 2 will still be in place to separate the new facilities on the eastern periphery of the district from the contributing district elements that are located in the center and along the western periphery of the district. All buildings and structures will be clearly contemporary in design and will not create a false sense of historical development in the district, and will be smaller in height compared to the monumental nature of remaining Hangars 1 and 2, should Hangar 3 be removed, preserving their visual prominence within the setting of the airfield. The placement of the Undertaking's buildings also respects the established pattern of development of the airfield, leaving the main central runway features and original 1930s Shenandoah Plaza portion intact with more modern and contemporary

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supportive facilities constructed along the airfield perimeter. While the buildings will likely have a more contemporary style, they will feature design elements and materials that reflect the existing vocabulary of the district yet remain subordinate in scale and design compared to the extant district contributors.

The visual effects and alterations to the spatial organization to the district will be concentrated at the northeast corner, leaving the original Shenandoah Plaza portion and much of the airfield in its existing condition. While some of these alterations associated with the BMF, most notably the removal of Building 69 and the introduction of the solar panel canopy arrays, will alter the spatial organization and setting of contributors at the northeast corner of the airfield, the majority of the district will be retained. Alterations associated with the private hangar, including the construction of the new hangar itself and the demolition of Building 684 will not significantly alter the spatial organization for contributors in the northeast corner of the airfield and they will not significantly alter the viewshed across the airfield, retaining the majority of the district. The proposed demolition of Hangar 3, while not part of this Undertaking, will also contribute to the alteration of the spatial organization and setting of the overall NAS Sunnyvale Historic District; however, the proposed removal of Hangar 3 and this Undertaking will not alter the overall significance of the district or its contributing elements. Alterations associated with the Undertaking will result in diminished historical integrity; however, the vast majority of the contributors will be retained in their existing condition, and the design conditions outlined for the new facilities will further ensure the compatibility within the setting and established character of the district. Therefore, despite the adverse effects caused from the alterations to specific contributors, the NAS Sunnyvale Historic District and its expanded boundaries will continue to retain sufficient historical integrity to qualify as being eligible for listing on the NRHP.

## **6.4 Summary of Adverse Effects of the Undertaking**

The Undertaking features two broad programs that will be constructed in the eastern portion of the NAS Sunnyvale Historic District: the BMF and the private hangar.

Adverse effects resulting from direct alterations of the Undertaking include the removal of Building 69 and the installation of the bus electrification infrastructure (solar panel canopy arrays, charging stations, supporting infrastructure) on East MF1002 as part of the BMF scope of the Undertaking. The removal and physical alterations of these contributors will result in diminished integrity, and thus adverse effects, to the NAS Sunnyvale Historic District. Table 2 lists the historic properties in the APE and anticipated project effects on each historic property.

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Although there appears to be no archaeological resources in the project footprint, there is potential for unknown resources to be extant. While previous surveys indicate no evidence of archaeological resources in this vicinity, a qualified archaeological monitor will be present during initial ground disturbing activities. In the event that archaeological materials are discovered, all work in the vicinity of the discovery will be halted, the NASA Cultural Resources Manager will be notified, and appropriate steps outlined in the ICRMP Standard Operating Procedure 8: Inadvertent Discovery, will be implemented, resulting in no adverse effects.

Adverse effects caused by visual alterations within the setting of historic properties will also result from the removal of Building 69 and the installation of the solar panel array canopies and charging stations, which will extend over the eastern portion of East MF1002. The removal of Building 69 will also result in indirect effects to the High Explosive Magazines and Building 442, which collectively form the munitions handling network at the eastside of the airfield. The removal of Building 69 will disrupt the spatial organization of this system, thus diminishing several aspects of historical integrity, including location, design, setting, feeling, and association. The aircraft parking apron is defined by the expansive, open paved surface. This is also a significant element of the setting for neighboring historic properties at the eastside of the expanded NAS Sunnyvale Historic District, particularly Hangars 2 and 3. While the integrity of setting will be altered for contributing properties on the Eastside Airfield, the integrity of the overall NAS Sunnyvale Historic District will be largely retained.

At this time, the major Undertaking components are designed at a conceptual level. Based upon these preliminary designs, the overall stylistic treatment of the main buildings – Bus Maintenance & Operations Building, Bus Washing Building, and Private Hangar – will be differentiated within the NAS Sunnyvale Historic District as contemporary structures, while also being compatible within the setting of the expanded NAS Sunnyvale Historic District through placement, massing, and adhering to a comparable aesthetic vocabulary and material palette. As such, these preliminary designs for the main buildings would follow the applicable Secretary of the Interior's Standards with respect to rehabilitation within a larger historic district. The future designs will continue to adhere to the design approach outlined in **Section 2.2** which outlines a series of criteria that will be taken into consideration in developing designs that are sensitive to the historic character of the district. By adhering to this approach, the design of the buildings proposed as part of the Undertaking will be compliant with the Standards; however, this does not mean that the new construction will avoid adverse effects. Design review will be performed by qualified architectural historians, as outlined in **Section 7.1**. All adverse effects associated with the Undertaking are those outlined in the paragraphs above.



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Table 2. Summary of Historic Properties Affected

Bldg. #	Bldg. Name	Effects
01	Hangar 1	No Adverse Effect
02	Gymnasium/ Balloon Hangar	No Effect
05	Water Tower	No Effect
10	Heat Plant	No Effect
15	Security Station/ Fire Station and Laundry	No Effect
16	Public Works/ Locomotive Crane Shed	No Effect
17	Administration/ Admirals Building	No Effect
17a	Memorial Anchor	No Effect
18	Unmanned Aerial Vehicle Research Building/ Aerological Center	No Effect
19	Industry Partners Building/ Bachelor Enlisted Quarters	No Effect
20	Bachelor Officer Quarters	No Effect
21	Garages/ Bachelor Officers Garage	No Effect
22	Garages/ Bachelor Officers Garage	No Effect
23	Carnegie Mellon University/ Dispensary	No Effect
24	Carnegie Mellon University Storage/ Ambulance Garage	No Effect
25	Admin. Building/ Recreation Building	No Effect
26	Gate House	No Effect

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Bldg. #	Bldg. Name	Effects
32	North Floodlight Tower	No Adverse Effect
33	South Floodlight Tower	No Adverse Effect
40	Flagpole & Grounds	No Effect
46	Hangar 2	Adverse Effect (changes to setting)
47	Hangar 3	Adverse Effect (demolition under separate undertaking)
55	Heat Plant	No Effect
69	Inert Ammunition Storage	Adverse Effect (demolition)
70	Fuse & Detonator Magazine	Adverse Effect (changes to setting)
71, 72, 73, 74	High Explosive Magazines	Adverse Effect (changes to setting)
105	Airfield Lighting Vault	No Effect
106	Aircraft Compass Calibration Pad	No Adverse Effect
137, 138, 139, 140	Aircraft Fuel Storage Tanks	N/A
141	Tank Truck Filling Rack	N/A
143, 147	High Explosive Magazines	Adverse Effect (changes to setting)
158	Flight Operations Building & Tower	No Adverse Effect

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Bldg. #	Bldg. Name	Effects
329	Ultra-High Frequency/ Very High Frequency Receiver Building	No Effect
442	Ordnance Handling Pad	No Adverse Effect
454	Ultra-High Frequency/ Very High Frequency Transmission Building	No Effect
511	Weapons Station	N/A
684	Ground Maintenance Storage	N/A
686	Parachute Repair Building	N/A
934	Moffett Field Golf Course Clubhouse	N/A
A1-I1	Housing & Garages	No Effect
MF1000	Runway 32L/ 14R	No Adverse Effect
MF1001	Instrument Runway 14L/ 32R	No Adverse Effect
MF1002	Aircraft Parking Aprons	Adverse Effect (alteration and changes to setting)
MF1003	High-Speed Aircraft Fueling Pits	N/A
MF1016	Parallel & Connecting Taxiways	No Adverse Effect
N/A	Moffett Field Golf Course	N/A
N/A	Naval Storage Depot	Adverse Effect (changes to setting)
N/A	Alviso Salt Pond Historic Landscape	No Adverse Effect
N/A	LMSD Campus	No Adverse Effect

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Resolving Adverse Effects  
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## 7.0 Resolving Adverse Effects

To resolve adverse effects under Section 106, it is the lead federal agency's responsibility to consult with SHPO and other interested parties in finding solutions to avoid, minimize, or mitigate adverse effects to historic properties.

The adverse effects that must be addressed include the following:

1. Removal of Building 69, a contributor to the NAS Sunnyvale Historic District, including disruption to the munitions network at the eastside of the airfield.
2. Direct and indirect alterations to East MF 1002 through the construction of the solar panel canopy arrays, electric vehicle charging stations, and support infrastructure.
3. Alterations to the spatial organization and setting of the Eastside Airfield contributors to the NAS Sunnyvale Historic District.
4. Potential for finalized designs to visually alter the setting of historic properties within the NAS Sunnyvale Historic District

Potential alternatives were considered for the removal of Building 69 and the location of the Solar Panel Array Canopies. Building 69, the former inert ammunition storage building, is a simple one-story concrete building and is a contributor to the expanded NAS Sunnyvale Historic District. It was initially used to store the spent munitions and is part of the larger ammunition storage system network, which includes Building 442 and magazines located on the eastside of the airfield. Building 69 is significant under Criterion A for its associations with the operation of MFA from its construction in 1943 through to the end of fighter operations in 1961.

As part of the Undertaking's BMF portion, the area surrounding and including the existing bus surface parking lot will be reconfigured to improve efficient and safe circulation to accommodate the increased bus traffic. In order to fully execute this portion of the BMF, Building 69 must be removed from its current location at the northeast corner of the existing surface parking lot. The two alternatives for addressing Building 69 include relocation and demolition.

Relocation as an alternative is problematic for several reasons, the most important being that there are no logical relocation sites. The Eastside area of the airfield does not appear to have any areas that would accommodate the building while also retaining sufficient historical integrity. Additionally, the building is significant in relation to other elements of the munitions handling network at the airfield, which involves spatial

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connections with the ammunition magazines located to the northeast, as well as Building 442 and East MF1002. By relocating the building outside of this configuration to another area of the airfield, this significant spatial organization would be disrupted and would diminish the integrity of location, design, setting, feeling, and association of the munitions handling network within the eastern portion of the historic district. Therefore, the relocation alternative of Building 69 would not reduce the adverse effects. The expanded NAS Sunnyvale Historic District retains its NRHP eligibility under both scenarios, so demolition is preferred.

The solar panel array canopies associated with the BMF will result in an adverse effect to several contributors within the eastside airfield portion of the expanded NAS Sunnyvale Historic District, particularly East MF1002, Hangars 2 and 3, and the other contributing elements.

Alternative locations were explored, but the amount of surface area required for solar panels to support the electrification and emission goals of the bus fleet require an extensive canopy network. Analysis of the property has revealed multiple constraints that have greatly limited placement options. As such, the quantity of solar panels and general environmental constraints has determined that the proposed location, including the intrusion on the eastern portion of East MF1002, is the most realistic in supporting the emissions goals of the Undertaking while minimizing its adverse effect on the historic district.

Adverse effects will be resolved through consultation with SHPO and other identified consulting parties (The Moffett Field Historical Society) through the development and execution of a Memorandum of Agreement (MOA).

## **8.0 Conclusion**

The Undertaking involves the construction of several project components, all located within the eastern portion of the NAS Sunnyvale Historic District. These project components include:

1. BMF with operations and maintenance building, bus washing building, bus parking upgrades, and installation of large solar panel arrays in support of the future electrification of the Google bus fleet.
2. A private hangar, a new aircraft parking apron, and associated site upgrades, including the adaptive reuse of non-historic Building 686.
3. Preconstruction investigations, including geotechnical boring and utility location services.

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While the designs for the buildings are still under development, the overall design approach specifically outlines a series of conditions that will lead to the development of building designs that are both compatible, yet differentiated, within the setting of the NAS Sunnyvale Historic District. By adhering to these conditions, the Undertaking will avoid or minimize potential adverse effects.

However, scope elements associated with the BMF, including the demolition of Building 69 and the construction of the solar panel canopy arrays over East MF1002, will diminish the integrity of two contributors to the NAS Sunnyvale Historic District and will result in minor diminished integrity for the overall historic district. Demolition of Building 69 will directly affect the contributing property, whereas the large solar panel canopy arrays at East MF1002 will physically alter the contributing property and indirectly disrupt its character-defining flat, expansive nature. The addition of the solar canopy arrays, BMF, and private hangar will also indirectly affect the spatial and visual relationships of contributing historic properties on the Eastside Airfield and across the NAS Sunnyvale Historic District. Therefore, the Undertaking will result in adverse effects to contributing historic properties and the NAS Sunnyvale Historic District, and Stantec recommends a finding of Adverse Effect.

## 9.0 References

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**The following content was redacted from this public posting:**

Appendix A: Preliminary Site Layouts

# **MFA EASTSIDE AIRFIELD IMPROVEMENTS PROJECT SECTION 106 TECHNICAL REPORT**

Appendix B Massing Simulations  
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## **Appendix B Massing Simulations**





Figure 1: Existing conditions at Eastside of MFA, looking northeast.



Figure 2: Proposed project components at Eastside of MFA, looking northeast.





Figure 3: Existing conditions at airfield, looking northeast from Hangar 1.



Figure 4: Proposed massing, showing private aircraft hangar at airfield, looking northeast from Hangar 1.





Figure 5: Existing conditions at airfield, looking east towards Hangar 2 from Hangar 1.



Figure 6: Proposed conditions under project at airfield, looking east towards Hangar 2 from Hangar 1.





Figure 7: Existing conditions at the northeast corner of the airfield, looking southeast from the north end of the runways towards Hangars 2 and 3.



Figure 8: Proposed massing of private aircraft hangar at airfield, looking southeast from the north end of the runways towards Hangars 2 and 3.





Figure 9: Existing conditions at airfield, looking north towards Hangars 2 and 3 from the southeast corner of the runways.



Figure 10: Proposed massing showing private aircraft hangar, looking north from the southeast corner of the runway.





Figure 11: Existing conditions at airfield, looking northeast towards Hangars 2 and 3 from the southeast corner of the runways.



Figure 12: Proposed massing at airfield, showing private aircraft hangar and solar panel canopy, looking northeast towards Hangars 2 and 3 from the southeast corner of the runways.





Figure 13: Existing conditions at northeast corner of the airfield, looking south towards the Naval Storage Depot, High Explosive Magazines, and Hangar 3.



Figure 14: Proposed massing, showing Bus Operations and Maintenance building and the removal of Building 69 at the northeast corner of the airfield, looking south towards the Naval Storage Depot, High Explosives Magazines, and Hangar 3.





Figure 15: Existing conditions at the northeast corner of the airfield, looking southwest towards the High Explosive Magazines (left), Hangar 3, and Hangar 2.



Figure 16: Proposed massing under project, showing private aircraft hangar and the removal of Building 69, looking southwest towards the High Explosive Magazines (left), Hangar 3, and Hangar 2.





Figure 17: Proposed project components at Eastside MFA, including the demolition of Hangar 3, looking northeast.

**The following content was redacted from this public posting:**

Appendix C: DPR 523 Forms